

**FINAL CLOSEOUT REPORT
FOR IHSS GROUP 800-6**



March 2003

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FOR IHSS GROUP 800-6**

Approval received from the Colorado Department of Public Health and
Environment

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Approval letter contained in the Administrative Record.

March 2003

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ENCLOSURE

Compact Disc – Analytical Data

ACRONYMS

ACM	asbestos containing material
AL	action level
AOC	Area of Concern
CDPHE	Colorado Department of Public Health and Environment
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CMS/FS	Corrective Measures Study/Feasibility Study
CHWA	Colorado Hazardous Waste Act
COC	contaminant of concern
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
DQA	Data Quality Assessment
DQO	Data Quality Objective
EPA	U.S. Environmental Protection Agency
ER	Environmental Restoration
ER RSOP	Environmental Restoration RFCA Standard Operating Protocol
ft	feet
HDPE	high-density polyethylene
HEPA	high efficiency particulate absorption
IA	Industrial Area
IDC	Item Description Code
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
K-H	Kaiser-Hill Company L.L.C.
LLW	low-level waste
mg/kg	milligrams per kilogram
NLR	No Longer Representative
NPWL	New Process Waste Lines
OPWL	Original Process Waste Lines
PAC	Potential Area of Concern
PARCCS	precision, accuracy, representativeness, completeness, comparability and sensitivity
pCi/g	picocuries per gram
PCB	Polychlorinated Biphenyls
PCOC	potential contaminant of concern
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RFCA	Rocky Flats Cleanup Agreement
RFETS	Rocky Flats Environmental Technology Site
RFI/RI	RCRA Facility Investigation/Remedial Investigation
RL	reporting limit
RSOP	RFCA Standard Operating Procedure
SAP	Sampling and Analysis Plan
Site	Rocky Flats Environmental Technology Site
SOR	sum of ratio
SVOC	semivolatile organic compound
UBC	Under Building Contamination
ug/kg	micrograms per kilogram
VOC	volatile organic compound
V&V	verification and validation
WRW	Wildlife Refuge Worker

EXECUTIVE SUMMARY

This closeout report summarizes accelerated action activities conducted at Individual Hazardous Substance Site (IHSS) Group 800-6, which is located at the Rocky Flats Environmental Technology Site. Activities were planned and executed in accordance with the Industrial Area (IA) Sampling and Analysis Plan, the IASAP Addendum #IA-02-01, and the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol for Routine Remediation (ER RSOP). Notification of the planned characterization and removal activities was provided in ER RSOP Notification #02-02.

Activities were conducted between May 8 and July 18, 2002, and involved the excavation of the Building 889 slab, footers, footer walls, upper portions of concrete pillars, sumps and tanks, a small portion of the New Process Waste Lines (NPWL), and a large portion of the Original Process Waste Lines (OPWL) in the area. Two of the tanks (i.e., Tanks 28 and 40) and the portion of the NPWL were regulated under the Colorado Hazardous Waste Act. Portions of the NPWL and Valve Vault 4 within IHSS 164.3 were not removed as part of this action. The NPWL, OPWL and valve vaults will be addressed based on site-wide decisions regarding these items. Any related work and sampling results will be documented in another closeout report at a later date.

The action also involved characterization, including characterization of excavations where items were removed and in areas sampled prior to the accelerated action. Characterization analytical results indicate that all soil concentrations were below RFCA Tier II Action Levels, except for one beryllium concentration in a surface soil sample near Tank 40 that was collected prior to the accelerated action. That sample location is no longer representative. Soil concentrations also were below the proposed Wildlife Refuge Worker Action Levels. Results of the data quality assessment conducted confirmed that the data quality objectives were attained relative to sampling power (number and types of samples), confidence in decisions (>90%), and the various verification and validation criteria applied.

Removal activities were consistent with and contributed to the ER RSOP overall long-term remedial action objectives for RFETS soil. The removal of concrete items, including sumps and tanks, and portions of the OPWL and NPWL, and the disruption of remaining lines contributed to the protection of human health and the environment, because potential sources of contamination were removed or isolated. These actions also minimized the need for long-term maintenance and institutional or engineering controls because potential sources of contamination were removed or isolated. In addition, best management practices were used during the accelerated action to prevent the spread of contamination during the accelerated action (e.g., erosion and duct controls). Air monitoring data during the accelerated action did not indicate any exceedances.

Even though some process waste lines remain, no group-specific, near-term management techniques are required. Remaining lines have been isolated (grouted). Excavation at the site will continue to be controlled through the Site Soil Disturbance Permit process. Fencing and signs restricting access will be posted to minimize disturbance to newly-revegetated areas. Site access and security controls and the Soil Disturbance Permit process will remain in place pending implementation of long-term controls.

The presence of radionuclides, metals, VOCs, and SVOCs in soils will be analyzed in the Site Wide Comprehensive Risk Assessment, which is part of the RCRA Facility

Investigation/Remedial Investigation and Corrective Measures Study/Feasibility Study that will be conducted for the Site. The need for and extent of any, more general, long-term stewardship activities will also be analyzed in the RCRA Facility Investigation/Remedial Investigation and Corrective Measures Study/Feasibility Study and will be proposed as part of the preferred alternative in the Proposed Plan for the Site. Institutional controls and other long-term stewardship requirements for Rocky Flats will ultimately be contained in the Corrective Action Decision/Record of Decision, in any post-closure Colorado Hazardous Waste Act permit that may be required, and in any post-RFCA agreement.

No long-term stewardship activities are recommended for IHSS Group 800-6 beyond the generally applicable Site requirements that may be imposed on this area in the future, which are dependent upon the final remedy selected. Institutional controls that will be used as appropriate for this area include prohibitions on construction of buildings in the IA, restrictions on excavation or other soil disturbance, or prohibitions on groundwater pumping in the area of IHSS Group 800-6.

No specific engineered controls are anticipated as a result of the conditions remaining in IHSS Group 800-6.

No specific environmental monitoring is anticipated as a result of the conditions remaining in IHSS Group 800-6.

This closeout report and associated documentation will be retained as part of the Rocky Flats administrative record file. These specific long-term stewardship recommendations will also be summarized in the Rocky Flats *Long Term Stewardship Strategy*.

Approval of this Closeout Report constitutes regulatory agency concurrence that this IHSS Group is a No Further Accelerated Action (NFAA) site. This information and NFAA determination will be documented in the FY03 Historical Release Report (HRR).

1.0 INTRODUCTION

This closeout report summarizes characterization and accelerated action activities conducted at Individual Hazardous Substance Site (IHSS) Group 800-6 at the Rocky Flats Environmental Technology Site (RFETS or Site) in Golden, Colorado. IHSS Group 800-6 consists of the following IHSSs and Under Building Contamination (UBC) site:

- UBC 889, Decontamination and Waste Reduction Facility;
- Original Process Waste Line (OPWL) Tanks 28 and 40; and
- IHSS 800-164.3, Radioactive Site 800 Area Site #2 Building 889 Storage Pad

The location of IHSS Group 800-6 is shown on Figure 1, and the UBC site, OPWL tanks and the IHSS are shown on Figure 2.

Accelerated action activities were planned and executed in accordance with the Industrial Area (IA) Sampling and Analysis Plan (SAP) (DOE 2001a), IASAP Addendum #IA-02-01 (DOE 2001b), and the Environmental Restoration (ER) Rocky Flats Cleanup Agreement (RFCA) Standard Operating Protocol (RSOP) for Routine Soil Remediation (ER RSOP) (DOE 2002a). Notification of the planned activities was provided in ER RSOP Notification #02-02 (DOE 2002b), which was approved by the Colorado Department of Public Health and Environment (CDPHE) on March 13, 2002 (CDPHE 2002).

This report contains the information necessary to demonstrate attainment of cleanup objectives and final closure of IHSS Group 800-6. This information includes:

- Site Characterization Information
 - Description of site characterization activities, and
 - Site characterization data, including data tables and maps;
- Site Accelerated Action Information
 - Description of the accelerated action, including the rationale for the action and map of the target remediation area,
 - Map of the actual remediation area, including bounds of the excavation, and dates and durations of specific remedial activities,
 - Photographs documenting site characterization, remediation, and reclamation activities;
- Confirmation sampling data, including data tables and location maps, as well as a comparison of the confirmation data to applicable cleanup goals;
- Description of Resource Conservation and Recovery Act (RCRA) unit closure activities,

- Description of deviations from the ER RSOP,
- Description of near-term stewardship actions and long-term stewardship recommendations;
- Description of site condition after remediation that includes a map of residual contamination above background means plus two standard deviations, reporting limits (RLs), and Tier II Action Levels (ALs);
- Disposition of wastes;
- Site reclamation;
- Table of No Longer Representative locations and sample numbers that have been remediated. These data will be used to mark database records so they are not used in the Comprehensive Risk Assessment or other Site analyses; and
- Data quality assessment (DQA), including comparison of confirmation data with project data quality objectives (DQOs).

2.0 SITE CHARACTERIZATION

IHSS Group 800-6 characterization information consists of historical knowledge and analytical data. Historical information for the UBC site, OPWL tanks, and IHSS is presented below in Sections 2.1 through 2.3. Analytical data for IHSS Group 800-6 (pre-accelerated action and accelerated action data) are summarized in Sections 2.4 through 2.6. Appendix C includes a compact disk that contains a complete data set, including both pre-accelerated action and accelerated action data.

Accelerated action analytical data were collected in accordance with IASAP Addendum #IA-02-01 (DOE 2001b). Sampling specifications, including potential contaminants of concern and media to be sampled, are presented in Table 1. Deviations from the IASAP Addendum are presented and explained in Table 2.

2.1 UBC 889, Decontamination and Waste Reduction Facility

Building 889 was placed into service in 1969 and housed decontamination and waste reduction operations for wastes originating outside the Site's Protected Area. Wastes entering Building 889 included surplus equipment that was decontaminated by steam cleaning for reuse on site or sale offsite. HEPA filters, combustible wastes, and non-reusable equipment were compacted, placed in crates, and shipped offsite for disposal. Tank 28 was constructed into the Building 889 slab.

2.2 OPWL Tank 40

Tank T-40 is located in the 800 Area west of Building 889. T-40 was reportedly installed in the mid-1950s and was abandoned in 1981 or 1982. The tank consists of two 400-gallon underground concrete tanks located in a concrete vault. The top of vault is approximately 7 feet below grade.

2.3 IHSS 800-164.3, Radioactive Site 800 Area Site #2 Building 889 Storage Pad

Building 889 is a decontamination facility that was first occupied in 1969. A storage pad north of the building was used to store uranium-contaminated equipment and contaminated drums prior to decontamination. An area to the west was used for the same purpose. A radioactive survey supports the fact that there was contamination at this western location.

Two incidents occurred at Building 889 that involve contaminated drums. On June 16, 1982, a waste drum spontaneously ignited, and on July 20, 1984, a uranium chip fire started in an improperly packed drum. Another incident occurred in September 1983, when nine machine tools were stored outside waiting for decontamination. The plastic sheeting that was covering the equipment had blown off, possibly allowing contamination to spread.

Building 884 was constructed in 1958 as a storage facility for Building 883. It was used as a mixed waste storage building. In September 1966, drums were reported to be leaking in the drum storage area outside of this building. Approximately 700 square feet (ft²) of soil and rocks were contaminated. It is thought that this information refers to a storage area east of Building 884 that was used prior to the construction of Building 889.

Some drums that contained hazardous or non-hazardous environmentally safe waste were sent to Building 889 for decontamination and reuse. The drum incidents in 1982 and 1984 involved uranium chip fires. No contamination was reported released when the drum caught fire in 1982. No documentation was found that detailed responses related to the incidents in 1983 or 1984.

Table 1
IHSS Group 800-6 Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
800-6	UBC 889	CF38-005	2083878	749150.1	Surface Soil	0	0.5	Metals	6010
		CF38-005	2083878	749150.1	Subsurface Soil	0.5	2.5	SVOC	8270
		CF38-005	2083878	749150.1	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF38-005	2083878	749150.1	Subsurface Soil	0.5	2.5	Metals	6010
		CF38-005	2083878	749150.1	Subsurface Soil	0.5	2.5	VOC	8260
		CF38-006	2083914	749150.1	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF38-006	2083914	749150.1	Subsurface Soil	0.5	2.5	SVOC	8270
		CF38-006	2083914	749150.1	Surface Soil	0	0.5	Metals	6010
		CF38-006	2083914	749150.1	Subsurface Soil	0.5	2.5	Metals	6010
		CF38-006	2083914	749150.1	Subsurface Soil	0.5	2.5	VOC	8260
		CF38-007	2083896	749119.1	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF38-007	2083896	749119.1	Subsurface Soil	0.5	2.5	SVOC	8270
		CF38-007	2083896	749119.1	Surface Soil	0	0.5	Metals	6010
		CF38-007	2083896	749119.1	Subsurface Soil	0.5	2.5	Metals	6010
		CF38-007	2083896	749119.1	Subsurface Soil	0.5	2.5	VOC	8260
		CF38-008	2083842	749087.8	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF38-008	2083842	749087.8	Subsurface Soil	0.5	2.5	SVOC	8270
		CF38-008	2083842	749087.8	Surface Soil	0	0.5	Metals	6010
		CF38-008	2083842	749087.8	Subsurface Soil	0.5	2.5	Metals	6010
		CF38-008	2083842	749087.8	Subsurface Soil	0.5	2.5	VOC	8260
		CF38-011	2083848	749145.2	Subsurface Soil	7.33	7.33	Radionuclides	HPGe
		CF38-011	2083848	749145.2	Subsurface Soil	7.33	7.33	SVOC	8270
		CF38-011	2083848	749145.2	Subsurface Soil	7.33	7.33	Metals	6010
		CF38-011	2083848	749145.2	Subsurface Soil	7.33	7.33	VOC	8260

Table 1
IHSS Group 800-6 Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
		CF38-014	2083854	749121	Subsurface Soil	7.17	7.17	Radionuclides	HPGe
		CF38-014	2083854	749121	Subsurface Soil	7.17	7.17	SVOC	8270
		CF38-014	2083854	749121	Subsurface Soil	7.17	7.17	Metals	6010
		CF38-014	2083854	749121	Subsurface Soil	7.17	7.17	VOC	8260
		CF38-015	2083916	749137.5	Subsurface Soil	3	5	Radionuclides	HPGe
		CF38-015	2083916	749137.5	Subsurface Soil	3	5	SVOC	8270
		CF38-015	2083916	749137.5	Subsurface Soil	3	5	Metals	6010
		CF38-015	2083916	749137.5	Subsurface Soil	3	5	VOC	8260
	IHSS 164.3	CE38-001	2083698	749150.4	Subsurface Soil	0.5	0.67	Radionuclides	HPGe
		CE38-001	2083698	749150.4	Subsurface Soil	0.5	0.67	SVOC	8270
		CE38-001	2083698	749150.4	Surface Soil	0	0.5	Metals	6010
		CE38-001	2083698	749150.4	Subsurface Soil	0.5	0.67	Metals	6010
		CE38-001	2083698	749150.4	Subsurface Soil	0.5	0.67	VOC	8260
		CE38-002	2083734	749150.2	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CE38-002	2083734	749150.2	Subsurface Soil	0.5	2.5	SVOC	8270
		CE38-002	2083734	749150.2	Surface Soil	0	0.5	Metals	6010
		CE38-002	2083734	749150.2	Subsurface Soil	0.5	2.5	Metals	6010
		CE38-002	2083734	749150.2	Subsurface Soil	0.5	2.5	VOC	8260
		CE39-001	2083698	749212.4	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CE39-001	2083698	749212.4	Subsurface Soil	0.5	2.5	SVOC	8270
		CE39-001	2083698	749212.4	Surface Soil	0	0.5	Metals	6010
		CE39-001	2083698	749212.4	Subsurface Soil	0.5	2.5	Metals	6010
		CE39-001	2083698	749212.4	Subsurface Soil	0.5	2.5	VOC	8260

Table 1
IHSS Group 800-6 Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
		CE39-002	2083716	749253.5	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CE39-002	2083716	749253.5	Subsurface Soil	0.5	2.5	SVOC	8270
		CE39-002	2083716	749253.5	Surface Soil	0	0.5	Metals	6010
		CE39-002	2083716	749253.5	Subsurface Soil	0.5	2.5	Metals	6010
		CE39-002	2083716	749253.5	Subsurface Soil	0.5	2.5	VOC	8260
		CE39-003	2083716	749181.3	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CE39-003	2083716	749181.3	Subsurface Soil	0.5	2.5	SVOC	8270
		CE39-003	2083716	749181.3	Surface Soil	0	0.5	Metals	6010
		CE39-003	2083716	749181.3	Subsurface Soil	0.5	2.5	Metals	6010
		CE39-003	2083716	749181.3	Subsurface Soil	0.5	2.5	VOC	8260
		CF38-001	2083770	749150.1	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF38-001	2083770	749150.1	Subsurface Soil	0.5	2.5	SVOC	8270
		CF38-001	2083770	749150.1	Surface Soil	0	0.5	Metals	6010
		CF38-001	2083770	749150.1	Subsurface Soil	0.5	2.5	Metals	6010
		CF38-001	2083770	749150.1	Subsurface Soil	0.5	2.5	VOC	8260
		CF38-002	2083806	749150.2	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF38-002	2083806	749150.2	Subsurface Soil	0.5	2.5	SVOC	8270
		CF38-002	2083806	749150.2	Surface Soil	0	0.5	Metals	6010
		CF38-002	2083806	749150.2	Subsurface Soil	0.5	2.5	Metals	6010
		CF38-002	2083806	749150.2	Surface Soil	0	0.5	VOC	8260
		CF38-003	2083842	749150.1	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF38-003	2083842	749150.1	Subsurface Soil	0.5	2.5	SVOC	8270
		CF38-003	2083842	749150.1	Surface Soil	0	0.5	Metals	6010

Table 1
IHSS Group 800-6 Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
		CF38-003	2083842	749150.1	Subsurface Soil	0.5	2.5	Metals	6010
		CF38-003	2083842	749150.1	Subsurface Soil	0.5	2.5	VOC	8260
		CF39-001	2083752	749243.4	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF39-001	2083752	749243.4	Subsurface Soil	0.5	2.5	SVOC	8270
		CF39-001	2083752	749243.4	Surface Soil	0	0.5	Metals	6010
		CF39-001	2083752	749243.4	Subsurface Soil	0.5	2.5	Metals	6010
		CF39-001	2083752	749243.4	Subsurface Soil	0.5	2.5	VOC	8260
		CF39-003	2083788	749243.6	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF39-003	2083788	749243.6	Subsurface Soil	0.5	2.5	SVOC	8270
		CF39-003	2083788	749243.6	Surface Soil	0	0.5	Metals	6010
		CF39-003	2083788	749243.6	Subsurface Soil	0.5	2.5	Metals	6010
		CF39-003	2083788	749243.6	Subsurface Soil	0.5	2.5	VOC	8260
		CF39-004	2083788	749181.4	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF39-004	2083788	749181.4	Subsurface Soil	0.5	2.5	SVOC	8270
		CF39-004	2083788	749181.4	Surface Soil	0	0.5	Metals	6010
		CF39-004	2083788	749181.4	Subsurface Soil	0.5	2.5	Metals	6010
		CF39-004	2083788	749181.4	Subsurface Soil	0.5	2.5	VOC	8260
		CF39-006	2083824	749243.7	Surface Soil	0	0.5	Radionuclides	HPGe
		CF39-006	2083824	749243.7	Subsurface Soil	0.5	2.5	SVOC	8270
		CF39-006	2083824	749243.7	Surface Soil	0	0.5	Metals	6010
		CF39-006	2083824	749243.7	Subsurface Soil	0.5	2.5	Metals	6010
		CF39-006	2083824	749243.7	Subsurface Soil	0.5	2.5	VOC	8260

Table 1
IHSS Group 800-6 Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
		CF39-007	2083824	749181.3	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF39-007	2083824	749181.3	Subsurface Soil	0.5	2.5	SVOC	8270
		CF39-007	2083824	749181.4	Surface Soil	0	0.5	Metals	6010
		CF39-007	2083824	749181.3	Subsurface Soil	0.5	2.5	Metals	6010
		CF39-007	2083824	749181.3	Subsurface Soil	0.5	2.5	VOC	8260
		CF39-008	2083860	749243.8	Surface Soil	0	0.5	Radionuclides	HPGe
		CF39-008	2083860	749243.8	Subsurface Soil	0.5	2.5	SVOC	8270
		CF39-008	2083860	749243.8	Surface Soil	0	0.5	Metals	6010
		CF39-008	2083860	749243.8	Subsurface Soil	0.5	2.5	Metals	6010
		CF39-008	2083860	749243.8	Subsurface Soil	0.5	2.5	VOC	8260
		CF39-009	2083860	749181.2	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF39-009	2083860	749181.2	Subsurface Soil	0.5	2.5	SVOC	8270
		CF39-009	2083860	749181.2	Surface Soil	0	0.5	Metals	6010
		CF39-009	2083860	749181.2	Subsurface Soil	0.5	2.5	Metals	6010
		CF39-009	2083860	749181.2	Subsurface Soil	0.5	2.5	Metals	6010
		CF39-011	2083896	749243.6	Surface Soil	0	0.5	Radionuclides	HPGe
		CF39-011	2083896	749243.6	Subsurface Soil	0.5	2.5	SVOC	8270
		CF39-011	2083896	749243.6	Surface Soil	0	0.5	Metals	6010
		CF39-011	2083896	749243.6	Subsurface Soil	0.5	2.5	Metals	6010
		CF39-011	2083896	749243.6	Subsurface Soil	0.5	2.5	VOC	8260
		CF39-012	2083896	749181.3	Subsurface Soil	0.5	2.5	Radionuclides	HPGe
		CF39-012	2083896	749181.3	Subsurface Soil	0.5	2.5	SVOC	8270

Table 1
IHSS Group 800-6 Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
		CF39-012	2083896	749181.3	Surface Soil	0	0.5	Metals	6010
		CF39-012	2083896	749181.3	Subsurface Soil	0.5	2.5	Metals	6010
		CF39-012	2083896	749181.3	Subsurface Soil	0.5	2.5	VOC	8260
		CF39-013	2083914	749212.4	Surface Soil	0	0.5	Radionuclides	HPGe
		CF39-013	2083914	749212.4	Subsurface Soil	0.5	2.5	SVOC	8270
		CF39-013	2083914	749212.4	Surface Soil	0	0.5	Metals	6010
		CF39-013	2083914	749212.4	Subsurface Soil	0.5	2.5	Metals	6010
		CF39-013	2083914	749212.4	Subsurface Soil	0.5	2.5	VOC	8260
	PAC 000-504, New Process Waste Line	CF38-025	2083885	749096.7	Subsurface Soil	5	5	Radionuclides	HPGe
		CF38-025	2083885	749096.7	Subsurface Soil	5	5	Metals	6010
		CF38-025	2083885	749096.7	Subsurface Soil	5	5	VOC	8260
	IHSS 121, Original Process Waste Lines Tank T-40	CF38-017	2083788	749124.4	Subsurface Soil	15	15	Radionuclides	HPGe
		CF38-018	2083788	749112.6	Subsurface Soil	15	15	Radionuclides	HPGe
		CF38-023	2083821	749131.1	Subsurface Soil	3	5	Radionuclides	HPGe
		CF38-023	2083821	749131.1	Subsurface Soil	3	5	SVOC	8270
		CF38-023	2083821	749131.1	Subsurface Soil	3	5	Metals	6010
		CF38-023	2083821	749131.1	Subsurface Soil	3	5	VOC	8260
		CF38-024	2083777	749119.8	Subsurface Soil	10.5	12.5	SVOC	8270
		CF38-024	2083777	749119.8	Subsurface Soil	10.5	12.5	VOC	8260
	IHSS 121, Original Process Waste Lines Tank T-28	CF38-019	2083844	749144.9	Subsurface Soil	6.7	6.7	Radionuclides	HPGe
		CF38-019	2083844	749144.9	Subsurface Soil	6.7	6.7	SVOC	8270

Table 1
IHSS Group 800-6 Characterization Sampling Specifications

IHSS Group	IHSS/PAC/UBC Site	Location	Easting	Northing	Media	Begin Depth (ft)	End Depth (ft)	Analyte	Method
		CF38-019	2083844	749144.9	Subsurface Soil	6.7	6.7	Metals	6010
		CF38-019	2083844	749144.9	Subsurface Soil	6.7	6.7	VOC	8260
		CF38-020	2083852	749121.3	Subsurface Soil	6.7	6.7	Radionuclides	HPGe
		CF38-020	2083852	749121.3	Subsurface Soil	6.7	6.7	SVOC	8270
		CF38-020	2083852	749121.3	Subsurface Soil	6.7	6.7	Metals	6010
		CF38-020	2083852	749121.3	Subsurface Soil	6.7	6.7	VOC	8260
		CF38-021	2083849	749142	Subsurface Soil	6.7	6.7	Radionuclides	HPGe
		CF38-021	2083849	749142	Subsurface Soil	6.7	6.7	SVOC	8270
		CF38-021	2083849	749142	Subsurface Soil	6.7	6.7	Metals	6010
		CF38-021	2083849	749142	Subsurface Soil	6.7	6.7	VOC	8260
	IHSS 121, Original Process Waste Lines	CF38-010	2083812	749115	Subsurface Soil	5	5	Radionuclides	HPGe
		CF38-010	2083812	749115	Subsurface Soil	5	5	SVOC	8270
		CF38-010	2083812	749115	Subsurface Soil	5	5	Metals	6010
		CF38-010	2083812	749115	Subsurface Soil	5	5	VOC	8260
		CF38-027	2083785	749132.2	Subsurface Soil	4.5	5	Radionuclides	HPGe
		CF38-027	2083785	749132.2	Subsurface Soil	4.5	5	SVOC	8270
		CF38-027	2083785	749132.2	Subsurface Soil	4.5	5	Metals	6010
		CF38-027	2083785	749132.2	Subsurface Soil	4.5	5	VOC	8260

Table 2
Deviations from the IASAP Addendum

IHSS/PAC/ UBC Site	Location	Media	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Begin Depth (ft)	End Depth (ft)	Analyte	Comment
UBC 889	CF38-005	Surface Soil	2083878	749150.08	2083878	749150.1	0	0.5	Metals	No change
	CF38-005	Subsurface Soil	2083878	749150.08	2083878	749150.1	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF38-006	Surface Soil	2083914	749150.08	2083914	749150.1	0	0.5	Metals	No change
	CF38-006	Subsurface Soil	2083914	749150.08	2083914	749150.1	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF38-007	Surface Soil	2083896	749118.94	2083896	749119.1	0	0.5	Metals	No change
	CF38-007	Subsurface Soil	2083896	749118.94	2083896	749119.1	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF38-008	Surface Soil	2083842	749087.71	2083842	749087.8	0	0.5	Metals	No change
	CF38-008	Subsurface Soil	2083842	749087.71	2083842	749087.8	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF38-011	Subsurface Soil	2083837	749114.68	2083848	749145.2	7.33	7.33	Radionuclides Metals VOCs SVOC	Sample depth was estimated because the excavation could not be safely approached for a measurement. Soil sample was collected manually from the bucket of a backhoe.

Table 2
Deviations from the IASAP Addendum

IHSS/PAC/ UBC Site	Location	Media	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Begin Depth (ft)	End Depth (ft)	Analyte	Comment
	CF38-014	Subsurface Soil	2083847	749113.82	2083854	749121	7.17	7.17	Radionuclides Metals VOCs SVOC	Sample depth was estimated because the excavation could not be safely approached for a measurement. Soil sample was collected manually from the bucket of a backhoe.
	CF38-015	Subsurface Soil	2083920	749136.17	2083916	749137.5	3	5	Radionuclides	No change
	CF38-016	Subsurface Soil	2083822	749130.81			2.5	4.5	Radionuclides Metals VOCs SVOC	This location is covered by location CF38-023. CF38-016 became the designation for a waste sample (sediment from south transite duct).
IHSS 164.3	CE38-001	Surface Soil	2083698	749150.08	2083698	749150.4	0	0.5	Metals	No change
	CE38-001	Subsurface Soil	2083698	749150.08	2083698	749150.4	0.5	0.67	Radionuclides Metals VOCs SVOC	
	CE38-002	Surface Soil	2083734	749150.08	2083734	749150.2	0	0.5	Metals	No change
	CE38-002	Subsurface Soil	2083734	749150.08	2083734	749150.2	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CE39-001	Surface Soil	2083698	749212.43	2083698	749212.4	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling. The sample was collected within the deeper depth interval, but refusal of hand sampling equipment occurred at a depth short of the maximum planned depth.
	CE39-001	Subsurface Soil	2083698	749212.43	2083698	749212.4	0.5	2.5	Radionuclides Metals VOCs SVOC	

Table 2
Deviations from the IASAP Addendum

IHSS/PAC/ UBC Site	Location	Media	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Begin Depth (ft)	End Depth (ft)	Analyte	Comment
	CE39-002	Surface Soil	2083716	749243.16	2083716	749253.5	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling.
	CE39-002	Subsurface Soil	2083716	749243.16	2083716	749253.5	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CE39-003	Surface Soil	2083716	749181.26	2083716	749181.3	0	0.5	Metals	No change
	CE39-003	Subsurface Soil	2083716	749181.26	2083716	749181.3	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF38-001	Surface Soil	2083770	749150.08	2083770	749150.1	0	0.5	Metals	No change
	CF38-001	Subsurface Soil	2083770	749150.08	2083770	749150.1	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF38-002	Surface Soil	2083806	749150.08	2083806	749150.2	0	0.5	Metals	No change
	CF38-002	Subsurface Soil	2083806	749150.08	2083806	749150.2	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF38-003	Surface Soil	2083842	749150.08	2083842	749150.1	0	0.5	Metals	No change
	CF38-003	Subsurface Soil	2083842	749150.08	2083842	749150.1	0.5	2.5	Radionuclides Metals VOCs SVOC	

Table 2
Deviations from the IASAP Addendum

IHSS/PAC/ UBC Site	Location	Media	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Begin Depth (ft)	End Depth (ft)	Analyte	Comment
	CF38-004	Surface Soil	2083860	749118.90			0	0.5	Radionuclides Metals SVOC	This location is covered by location CF38-014
	CF38-004	Subsurface Soil	2083860	749118.90			0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF38-012	Surface Soil	2083864	749147.40			0	0.5	Radionuclides Metals SVOC	This location is covered by location CF38-011
	CF38-012	Subsurface Soil	2083864	749147.40			0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF39-001	Surface Soil	2083752	749243.61	2083752	749243.4	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling.
	CF39-001	Subsurface Soil	2083752	749243.61	2083752	749243.4	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF39-003	Surface Soil	2083788	749243.61	2083788	749243.6	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling. The sample was collected within the deeper depth interval, but refusal of hand sampling equipment occurred at a depth short of the maximum planned depth.
	CF39-003	Subsurface Soil	2083788	749243.61	2083788	749243.6	0.5	2.5	Radionuclides Metals VOCs SVOC	

Table 2
 Deviations from the IASAP Addendum

IHSS/PAC/ UBC Site	Location	Media	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Begin Depth (ft)	End Depth (ft)	Analyte	Comment
	CF39-004	Surface Soil	2083788	749181.26	2083788	749181.4	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling.
	CF39-004	Subsurface Soil	2083788	749181.26	2083788	749181.4	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF39-006	Surface Soil	2083824	749243.61	2083824	749243.7	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling.
	CF39-006	Subsurface Soil	2083824	749243.61	2083824	749243.7	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF39-007	Surface Soil	2083824	749181.26	2083824	749181.3	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling.
	CF39-007	Subsurface Soil	2083824	749181.26	2083824	749181.3	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF39-008	Surface Soil	2083860	749243.61	2083860	749243.8	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling.
	CF39-008	Subsurface Soil	2083860	749243.61	2083860	749243.8	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF39-009	Surface Soil	2083860	749181.26	2083860	749181.2	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling.
	CF39-009	Subsurface Soil	2083860	749181.26	2083860	749181.2	0.5	2.5	Radionuclides Metals VOCs SVOC	

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Table 2
Deviations from the IASAP Addendum

IHSS/PAC/ UBC Site	Location	Media	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Begin Depth (ft)	End Depth (ft)	Analyte	Comment
	CF39-011	Surface Soil	2083896	749243.61	2083896	749243.6	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling.
	CF39-011	Subsurface Soil	2083896	749243.61	2083896	749243.6	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF39-012	Surface Soil	2083896	749181.26	2083896	749181.3	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling.
	CF39-012	Subsurface Soil	2083896	749181.26	2083896	749181.3	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF39-013	Surface Soil	2083914	749212.43	2083914	749212.4	0	0.5	Metals	Sample was relocated due to the presence of a utility or other impediment to sampling.
	CF39-013	Subsurface Soil	2083914	749212.43	2083914	749212.4	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CE39-004	Surface Soil	2083734	749212.43	2083734	749177.5	0	0.5	Metals	No change
	CE39-004	Subsurface Soil	2083734	749212.43	2083734	749177.5	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF39-002	Surface Soil	2083770	749212.43	2083716	749253.7	0	0.5	Metals	No change
	CF39-002	Subsurface Soil	2083770	749212.43	2083716	749253.7	0.5	2.5	Radionuclides Metals VOCs SVOC	

Table 2
Deviations from the IASAP Addendum

IHSS/PAC/ UBC Site	Location	Media	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Begin Depth (ft)	End Depth (ft)	Analyte	Comment
	CF39-005	Surface Soil	2083806	749212.43	2083806	749177.5	0	0.5	Metals	No change
	CF39-005	Subsurface Soil	2083806	749212.43	2083806	749177.5	0.5	2.5	Radionuclides Metals VOCs SVOC	
	CF39-010	Surface Soil	2083878	749212.43	2083878	749182.4	0	0.5	Metals	No change
	CF39-010	Subsurface Soil	2083878	749212.43	2083878	749182.4	0.5	2.5	Radionuclides Metals VOCs SVOC	
PAC 000-504, New Process Waste Line	CF38-025	Subsurface Soil			2083885	749096.7	5	5	Radionuclides Metals VOCs	Location added. Soil collected beneath New Process Waste Line.
	CE39-005	Subsurface Soil	2083699	749167.92			8.5	10.5	Radionuclides Metals VOCs SVOC	Not sampled; biased sample located under a process line that was not removed.
	CE38-003	Subsurface Soil	2083704	749160.01			8.5	10.5	Radionuclides Metals VOCs SVOC	Not sampled; biased sample located under a process line that was not removed.
	CF39-016	Subsurface Soil	2083790	749164.77			8.5	10.5	Radionuclides Metals VOCs SVOC	Not sampled; biased sample located under a process line that was not removed.

Table 2
Deviations from the IASAP Addendum

IHSS/PAC/ UBC Site	Location	Media	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Begin Depth (ft)	End Depth (ft)	Analyte	Comment
	CF39-017	Subsurface Soil	2083801	749164.43			8.5	10.5	Radionuclides Metals VOCs SVOC	Not sampled; biased sample located under a process line that was not removed.
	CF39-018	Subsurface Soil	2083811	749165.31			8.5	10.5	Radionuclides Metals VOCs SVOC	Not sampled; biased sample located under a process line that was not removed.
	CF39-019	Subsurface Soil	2083852	749166.84			8.5	10.5	Radionuclides Metals VOCs SVOC	Not sampled; biased sample located under a process line that was not removed.
	CE38-009	Subsurface Soil	2083796	749155.51			8.5	10.5	Radionuclides Metals VOCs SVOC	Not sampled; biased sample located under a process line that was not removed.
IHSS 121, Original Process Waste Lines Tank T-40	CF38-017	Subsurface Soil			2083788	749124.4	15	15	Radionuclides	Location added. Soil collected beneath northeastern corner of Tank 40.
	CF38-018	Subsurface Soil			2083788	749112.6	15	15	Radionuclides	Location added. Soil collected beneath southeastern corner of Tank 40.
	CF38-023	Subsurface Soil			2083821	749131.1	3	5	Radionuclides Metals VOCs SVOC	Location added. Location had been backfilled before sample was taken. Geologist determined where base of fill existed (3'), then sampled a two-foot interval below the base.

Table 2
Deviations from the IASAP Addendum

IHSS/PAC/ UBC Site	Location	Media	Planned Easting	Planned Northing	Actual Easting	Actual Northing	Begin Depth (ft)	End Depth (ft)	Analyte	Comment
	CF38-024	Subsurface Soil			2083777	749119.8	10.5	12.5	VOC & SVOC	Location added. Soil collected beneath Tank 40.
	CF38-013	Subsurface Soil	2083784	749123.77			6.5	8.5	Radionuclides Metals VOCs SVOC	This location is covered by locations CF38-017 and CF38-024. CF38-013 became the designation for a waste sample (Tank 40 sludge).
IHSS 121, Original Process Waste Lines Tank T-28	CF38-019	Subsurface Soil			2083844	749144.9	6.7	6.7	Radionuclides Metals VOCs	Location added. Soil collected beneath the Tank 28 West Process Waste Line.
	CF38-020	Subsurface Soil			2083852	749121.3	6.7	6.7	Radionuclides Metals VOCs SVOC	Location added. Soil collected beneath the South Tank 28 leak.
	CF38-021	Subsurface Soil			2083849	749142	6.7	6.7	Radionuclides Metals VOCs SVOC	Location added. Soil collected around the outside of the south transite duct where it entered the sump.
IHSS 121, Original Process Waste Lines	CF38-010	Subsurface Soil	2083878	749212.43	2083812	749115	5	5	Radionuclides Metals VOCs SVOC	Sample depth was estimated because the excavation could not be safely approached for a measurement. Soil sample was collected manually from the bucket of a backhoe.
	CF38-027	Subsurface Soil			2083785	749132.2	4.5	5	Radionuclides Metals VOCs SVOC	Location added. Soil collected beneath the north-south OPWL.

2.4 Analytical Data for UBC 889

The UBC was characterized during the accelerated action. No historical samples had been collected from beneath Building 889. Accelerated action sample locations and analytical results associated with UBC 889 are presented in Figure 3 and in Table 3. Only results greater than background means plus two standard deviations or reporting limits are shown. The data indicate that all contaminant concentrations were below RFCA Tier II ALs. Concentrations also were below the proposed Wildlife Refuge Worker (WRW) ALs (DOE, CDPHE, EPA 2002; refer to Appendix D).

2.5 Analytical Data for OPWL Tank 40

OPWL Tank 40 was characterized prior to and during the accelerated action. Pre-accelerated action sample locations and analytical results for Group 800-6 are presented in Figure 4. Only results greater than background means plus two standard deviations or reporting limits are shown. The data indicate that concentrations were below RFCA Tier II ALs, with one exception. The surface sample at Location 04995 had a beryllium concentration of 2.1 mg/kg. The background concentration is 0.966 mg/kg, the Tier II AL is 1.04 mg/kg, and the Tier I AL is 104 mg/kg. In addition, pre-accelerated action data indicated that SVOCs and chlorinated solvents were PCOCs at Tank 40. These compounds were not found at concentrations greater than RFCA Tier II ALs during the accelerated action sampling (see next paragraph). Furthermore, sampling locations around the tank have been impacted by the excavation activities and are no longer representative (refer to Section 11.0). After the tank was removed, the excavation was backfilled, and the area was graded, covered with clean fill, and seeded. Concentrations also were below the proposed WRW ALs (refer to Appendix D).

Accelerated action sample locations and results for Group 800-6 are presented in Figure 3 and in Table 3. Only results greater than background means plus two standard deviations or reporting limits are shown. Data indicate that all contaminant concentrations were below RFCA Tier II ALs, including those associated with Tank 40. Concentrations also were below the proposed WRW ALs (refer to Appendix D).

2.6 Analytical Data for IHSS 800-164.3

IHSS 800-164.3 was characterized prior to and during the accelerated action. Pre-accelerated action sample locations and analytical results for Group 800-6 are presented in Figure 4. Only results greater than background means plus two standard deviations or reporting limits are shown. The data indicate that all contaminant concentrations were below RFCA Tier II ALs and the proposed WRW ALs (refer to Appendix D).

Accelerated action sample locations and analytical results for Group 800-6 are presented in Figure 3 and in Table 3. Only results greater than background means plus two standard deviations or reporting limits are shown. All contaminant concentrations were below RFCA Tier II ALs and the proposed WRW ALs (refer to Appendix D).

Table 3

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Table 3
 IHSS Group 800-6 Accelerated Action Characterization Data

IHSS Group	IHSS/PAC/UBC Site	Location Code	Analyte Name	Result	Reporting Limit	Background Plus Two Standard Deviations	Tier II Action Level	Tier I Action Level	Unit
		CE38-002	METHYLENE CHLORIDE	1.4	0.8	N/A	6	578	ug/kg
		CE38-002	TETRACHLOROETHENE	1	0.99	N/A	32	3150	ug/kg
		CE39-001	ALUMINUM	17500	1.4	16902	1000000	1000000	mg/kg
		CE39-001	CHROMIUM	21	0.06	16.99	4410	44300	mg/kg
		CE39-001	METHYLENE CHLORIDE	0.9	0.82	N/A	6	578	ug/kg
		CE39-001	STRONTIUM	90	0.0067	48.94	1000000	1000000	mg/kg
		CE39-001	STRONTIUM	89	0.0069	48.94	1000000	1000000	mg/kg
		CE39-002	ACETONE	5.2	5	N/A	272000	27200000	ug/kg
		CE39-002	ALUMINUM	22100	1.4	16902	1000000	1000000	mg/kg
		CE39-002	BARIUM	208	0.043	141.26	133000	133000	mg/kg
		CE39-002	CHROMIUM	36.4	0.059	16.99	4410	44300	mg/kg
		CE39-002	NICKEL	21.3	0.72	14.91	38400	38400	mg/kg
		CE39-002	STRONTIUM	84.4	0.0068	48.94	1000000	1000000	mg/kg
		CE39-002	VANADIUM	49.4	0.27	45.59	13400	13400	mg/kg
		CE39-003	STRONTIUM	95.4	0.0065	48.94	1000000	1000000	mg/kg
		CF38-001	LITHIUM	11.7	0.25	11.55	38400	38400	mg/kg
		CF38-002	STRONTIUM	71.8	0.0063	48.94	1000000	1000000	mg/kg
		CF38-003	BIS(2-ETHYLHEXYL)PHTHALATE	1100	74	N/A	3110000	311000000	ug/kg
		CF38-003	PYRENE	74	43	N/A	3970000	397000000	ug/kg
		CF38-003	STRONTIUM	75.2	0.0065	48.94	1000000	1000000	mg/kg
		CF39-001	BARIUM	166	0.043	141.26	133000	133000	mg/kg
		CF39-001	BARIUM	800	0.042	289.38	133000	133000	mg/kg
		CF39-001	CHROMIUM	17.4	0.059	16.99	4410	44300	mg/kg
		CF39-001	STRONTIUM	94.6	0.0068	48.94	1000000	1000000	mg/kg
		CF39-003	BARIUM	147	0.043	141.26	133000	133000	mg/kg

Table 3
 IHSS Group 800-6 Accelerated Action Characterization Data

IHSS Group	IHSS/PAC/UBC Site	Location Code	Analyte Name	Result	Reporting Limit	Background Plus Two Standard Deviations	Tier II Action Level	Tier I Action Level	Unit
		CF39-003	CHROMIUM	91.8	0.059	68.27	4410	44300	mg/kg
		CF39-003	STRONTIUM	78	0.0068	48.94	1000000	1000000	mg/kg
		CF39-004	ACETONE	9.3	4.6	N/A	272000	27200000	ug/kg
		CF39-004	METHYLENE CHLORIDE	0.91	0.8	N/A	6	578	ug/kg
		CF39-006	PYRENE	64	43	N/A	3970000	397000000	ug/kg
		CF39-006	STRONTIUM	64.8	0.0068	48.94	1000000	1000000	mg/kg
		CF39-006	STRONTIUM	65.2	0.0068	48.94	1000000	1000000	mg/kg
		CF39-006	VANADIUM	53.8	0.27	45.59	13400	13400	mg/kg
		CF39-007	ACETONE	5.5	4.6	N/A	272000	27200000	ug/kg
		CF39-007	METHYLENE CHLORIDE	1.1	0.8	N/A	6	578	ug/kg
		CF39-007	STRONTIUM	66.9	0.006	48.94	1000000	1000000	mg/kg
		CF39-008	CHROMIUM	19.4	0.058	16.99	4410	44300	mg/kg
		CF39-008	ZINC	91.4	0.22	73.76	576000	576000	mg/kg
		CF39-009	STRONTIUM	86.6	0.006	48.94	1000000	1000000	mg/kg
		CF39-011	PYRENE	92	46	N/A	3970000	397000000	ug/kg
		CF39-011	STRONTIUM	60.8	0.0066	48.94	1000000	1000000	mg/kg
		CF39-012	METHYLENE CHLORIDE	0.96	0.8	N/A	6	578	ug/kg
		CF39-012	STRONTIUM	52.2	0.006	48.94	1000000	1000000	mg/kg
		CF39-013	CHROMIUM	20.4	0.059	16.99	4410	44300	mg/kg
		CF39-013	CHRYSENE	98	62	N/A	160000	16000000	ug/kg
		CF39-013	FLUORANTHENE	200	99	N/A	5370000	537000000	ug/kg
		CF39-013	PYRENE	230	47	N/A	3970000	397000000	ug/kg
		CF39-013	STRONTIUM	214	0.0069	211.38	1000000	1000000	mg/kg
		CF39-013	STRONTIUM	79.3	0.0069	48.94	1000000	1000000	mg/kg
		CF39-002	ALUMINUM	23000	11	16902	1000000	1000000	mg/kg

Table 3
 IHSS Group 800-6 Accelerated Action Characterization Data

IHSS Group	IHSS/PAC/UBC Site	Location Code	Analyte Name	Result	Reporting Limit	Background Plus Two Standard Deviations	Tier II Action Level	Tier I Action Level	Unit
		CF39-002	LITHIUM	18	5.7	11.55	38400	38400	mg/kg
		CF39-002	MAGNESIUM	4000	23	2849.3			mg/kg
		CF39-002	NICKEL	19	4.6	14.91	38400	38400	mg/kg
		CF39-002	POTASSIUM	4100	340	2967.2			mg/kg
		CF39-002	CHROMIUM	19	0.57	16.99	4410	44300	mg/kg
		CF39-002	COBALT	15	1.1	10.91	115000	115000	mg/kg
		CF39-002	COPPER	35	2.3	18.06	71100	71100	mg/kg
		CF39-002	CALCIUM	14000	23	4467			mg/kg
		CF39-002	2,4,6-TRIBROMOPHENOL	3500	0	N/A			ug/kg
		CF39-002	XYLENES, TOTAL	25.6847	12	N/A	97400000	9740000	ug/kg
		CF39-002	U-235	0.22	1	0.12	24	113	pCi/g
		CF39-002	2-FLUOROBIPHENYL	2400	0	N/A			ug/kg
		CF39-002	2-FLUOROPHENOL	4100	0	N/A			ug/kg
		CF39-002	4-BROMOFLUOROBENZENE	55.9092	0	N/A			ug/kg
		CF39-002	FLUOROBENZENE	61.18319	0	N/A			ug/kg
		CF39-002	CALCIUM	64000	25	39382.27			mg/kg
		CE39-004	LITHIUM	14	6.4	11.55	38400	38400	mg/kg
		CE39-004	STRONTIUM	140	1.3	48.94	1000000	1000000	mg/kg
		CE39-004	U-235	0.35	1	0.12	24	113	pCi/g
		CF39-005	XYLENES, TOTAL	14.55005	13	N/A	97400000	9740000	ug/kg
		CF39-005	2-FLUOROBIPHENYL	2100	0	N/A			ug/kg
		CF39-005	2-FLUOROPHENOL	3700	0	N/A			ug/kg
		CF39-005	4-BROMOFLUOROBENZENE	78.41377	0	N/A			ug/kg
		CF39-005	FLUOROBENZENE	66.31747	0	N/A			ug/kg
		CF39-005	CALCIUM	140000	26	39382.27			mg/kg

Table 3
 IHSS Group 800-6 Accelerated Action Characterization Data

IHSS Group	IHSS/PAC/UBC Site	Location Code	Analyte Name	Result	Reporting Limit	Background Plus Two Standard Deviations	Tier II Action Level	Tier I Action Level	Unit
		CF39-010	ALUMINUM	18000	12	16902	1000000	1000000	mg/kg
		CF39-010	LITHIUM	14	5.8	11.55	38400	38400	mg/kg
		CF39-010	POTASSIUM	3200	350	2967.2			mg/kg
		CF39-010	CHROMIUM	20	0.58	16.99	4410	44300	mg/kg
		CF39-010	COBALT	12	1.2	10.91	115000	115000	mg/kg
		CF39-010	COPPER	30	2.3	18.06	71100	71100	mg/kg
		CF39-010	CALCIUM	6600	23	4467			mg/kg
		CF39-010	2,4,6-TRIBROMOPHENOL	4300	0	N/A			ug/kg
		CF39-010	2-FLUOROBIPHENYL	2900	0	N/A			ug/kg
		CF39-010	2-FLUOROPHENOL	4800	0	N/A			ug/kg
		CF39-010	4-BROMOFLUOROBENZENE	71.75118	0	N/A			ug/kg
		CF39-010	FLUOROBENZENE	58.48646	0	N/A			ug/kg
		CE39-004	LITHIUM	14	0.14	11.55	38400	38400	mg/kg
		CE39-004	Lithium	14	6.4	11.55	38400	38400	mg/kg
		CE39-004	STRONTIUM	140	0.064	48.94	1000000	1000000	mg/kg
		CE39-004	Strontium	140	1.3	48.94	1000000	1000000	mg/kg
		CE39-004	TIN	2.9	0.4		1000000	1000000	mg/kg
		CE39-004	U-235	0.35	1	0.12	24	113	pci/g-dry
		CF39-002	ALUMINUM	23000	2.4	16902	1000000	1000000	mg/kg
		CF39-002	Aluminum	23000	11	16902	1000000	1000000	mg/kg
		CF39-002	CHROMIUM	19	0.082	16.99	4410	44300	mg/kg
		CF39-002	Chromium	19	0.57	16.99	4410	44300	mg/kg
		CF39-002	COBALT	15	0.082	10.91	115000	115000	mg/kg
		CF39-002	Cobalt	15	1.1	10.91	115000	115000	mg/kg
		CF39-002	COPPER	35	0.22	18.06	71100	71100	mg/kg

Table 3

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Table 3
 IHSS Group 800-6 Accelerated Action Characterization Data

IHSS Group	IHSS/PAC/UBC Site	Location Code	Analyte Name	Result	Reporting Limit	Background Plus Two Standard Deviations	Tier II Action Level	Tier I Action Level	Unit
		CF38-005	CHRYSENE	67	56	N/A	160000	16000000	ug/kg
		CF38-005	COPPER	52.3	0.17	18.06	71100	71100	mg/kg
		CF38-005	COPPER	56.6	0.16	38.21	71100	71100	mg/kg
		CF38-005	FLUORANTHENE	160	88	N/A	5370000	537000000	ug/kg
		CF38-005	IRON	23400	1.6	18037	576000	576000	mg/kg
		CF38-005	MANGANESE	489	0.037	365.08	83600	83600	mg/kg
		CF38-005	NICKEL	18.1	0.72	14.91	38400	38400	mg/kg
		CF38-005	PYRENE	150	42	N/A	3970000	397000000	ug/kg
		CF38-005	STRONTIUM	115	0.0068	48.94	1000000	1000000	mg/kg
		CF38-005	TETRACHLOROETHENE	1.2	1.1	N/A	32	3150	ug/kg
		CF38-005	VANADIUM	66.8	0.27	45.59	13400	13400	mg/kg
		CF38-006	CHROMIUM	20.1	0.055	16.99	4410	44300	mg/kg
		CF38-006	COBALT	11.4	0.082	10.91	115000	115000	mg/kg
		CF38-006	COPPER	73	0.16	18.06	71100	71100	mg/kg
		CF38-006	COPPER	65.8	0.16	38.21	71100	71100	mg/kg
		CF38-006	COPPER	75.4	0.16	38.21	71100	71100	mg/kg
		CF38-006	IRON	31300	1.5	18037	576000	576000	mg/kg
		CF38-006	MANGANESE	556	0.034	365.08	83600	83600	mg/kg
		CF38-006	METHYLENE CHLORIDE	1.1	0.87	N/A	6	578	ug/kg
		CF38-006	METHYLENE CHLORIDE	1.5	0.93	N/A	6	578	ug/kg
		CF38-006	NICKEL	24.6	0.67	14.91	38400	38400	mg/kg
		CF38-006	STRONTIUM	131	0.0064	48.94	1000000	1000000	mg/kg
		CF38-006	VANADIUM	76.9	0.26	45.59	13400	13400	mg/kg
		CF38-007	ACETONE	5.5	4.9	N/A	272000	27200000	ug/kg
		CF38-007	CHROMIUM	18.4	0.057	16.99	4410	44300	mg/kg

Table 3

IHSS Group	IHSS/PAC/UBC Site	Location Code	Analyte Name	Result	Reporting Limit	Background Plus Two Standard Deviations	Tier II Action Level	Tier I Action Level	Unit
		CF38-007	COPPER	39.6	0.16	18.06	71100	71100	mg/kg
		CF38-007	COPPER	69.2	0.16	38.21	71100	71100	mg/kg
		CF38-007	IRON	22800	1.5	18037	576000	576000	mg/kg
		CF38-007	MANGANESE	418	0.035	365.08	83600	83600	mg/kg
		CF38-007	NICKEL	18.6	0.69	14.91	38400	38400	mg/kg
		CF38-007	STRONTIUM	106	0.0066	48.94	1000000	1000000	mg/kg
		CF38-007	TETRACHLOROETHENE	2.6	1.1	N/A	32	3150	ug/kg
		CF38-007	VANADIUM	60.7	0.26	45.59	13400	13400	mg/kg
		CF38-007	VANADIUM	90.8	0.25	88.49	13400	13400	mg/kg
		CF38-008	ACETONE	110	5.5	N/A	272000	27200000	ug/kg
		CF38-008	BIARIUM	194	0.041	141.26	133000	133000	mg/kg
		CF38-008	BENZO(A)ANTHRACENE	77	44	N/A	1600	160000	ug/kg
		CF38-008	CHROMIUM	88.1	0.059	68.27	4410	44300	mg/kg
		CF38-008	CHRYSENE	93	60	N/A	160000	16000000	ug/kg
		CF38-008	FLUORANTHENE	160	95	N/A	5370000	537000000	ug/kg
		CF38-008	MANGANESE	803	0.035	365.08	83600	83600	mg/kg
		CF38-008	MERCURY	4.9	0.014	1.52	576	576	mg/kg
		CF38-008	NICKEL	23.8	0.68	14.91	38400	38400	mg/kg
		CF38-008	PYRENE	160	45	N/A	3970000	397000000	ug/kg
		CF38-008	STRONTIUM	75.2	0.0065	48.94	1000000	1000000	mg/kg
		CF38-008	ZINC	391	0.22	73.76	576000	576000	mg/kg
		CF38-011	ACETONE	30	5.6	N/A	272000	27200000	ug/kg
		CF38-011	STRONTIUM	224	0.0073	211.38	1000000	1000000	mg/kg
		CF38-011	TETRACHLOROETHENE	2.7	1.2	N/A	32	3150	ug/kg
		CF38-014	ACETONE	5.7	5.5	N/A	272000	27200000	ug/kg

Table 3
IHSS Group 800-6 Accelerated Action Characterization Data

IHSS Group	IHSS/PAC/UBC Site	Location Code	Analyte Name	Result	Reporting Limit	Background Plus Two Standard Deviations	Tier II Action Level	Tier I Action Level	Unit
		CF38-014	ACETONE	6.4	5.6	N/A	272000	27200000	ug/kg
		CF38-014	STRONTIUM	268	0.0074	211.38	1000000	1000000	mg/kg
		CF38-014	STRONTIUM	291	0.0074	211.38	1000000	1000000	mg/kg
		CF38-015	ACETONE	5.2	4.9	N/A	272000	27200000	ug/kg
		CF38-015	BIS(2-ETHYLHEXYL)PHTHALATE	96	75	N/A	3110000	311000000	ug/kg
		CF38-015	COPPER	48.4	0.16	38.21	71100	71100	mg/kg

2.7 Sum of Ratios and Area of Concern

RFCA Tier II and Tier I sum of ratios (SORs) were calculated for the IHSS Group 800-6 locations. SOR calculations were based on accelerated action analytical data and the following list of contaminants of concern (COCs):

- Radionuclides (americium-241, plutonium-239/240, uranium-234, uranium-235, and uranium-238);
- Metals (arsenic, copper, mercury, lead, etc.); and
- Organics (volatile organic compounds [VOCs] and semi-volatile organic compounds [SVOCs]).

The COCs are based on data that exceed background means plus two standard deviations or RLs. Metals and organics were grouped together for nonradionuclide SOR calculations. Plutonium, americium, and uranium were grouped together for radionuclide SOR calculations. Table 4 presents the SORs for surface soil, and Table 5 presents the SORs for subsurface soils. SORs were calculated for all locations with analytical results greater than background means plus two standard deviations or reporting limits. All SORs were less than 1. SORs based on pre-accelerated action and accelerated action analytical data are presented in Section 8.0, Post-Remediation Condition.

The Area of Concern (AOC), shown on Figure 5, was determined based on analytical results presented in Section 2.0 (i.e., pre-accelerated action and accelerated action data). The AOC is defined as the area with any contaminant concentration greater than background means plus two standard deviations or RLs. Data from sample locations that are no longer representative were excluded.

Table 4
RFCA Tier II Sum of Ratios for IHSS Group 800-6 Surface Soil

Location	Tier II SOR Radionuclides	Tier II SOR Non-Radionuclides
CE38-001	N/A	0.000
CE39-001	N/A	0.018
CE39-002	N/A	0.028
CE39-003	N/A	0.000
CF38-001	N/A	0.000
CF38-002	N/A	0.000
CF38-003	N/A	0.000
CF38-005	N/A	0.053
CF38-006	N/A	0.069
CF38-007	N/A	0.050
CF38-008	N/A	0.012
CF39-001	N/A	0.001
CF39-003	N/A	0.001
CF39-006	N/A	0.004
CF39-007	N/A	0.000
CF39-008	N/A	0.000
CF39-009	N/A	0.000
CF39-011	N/A	0.000
CF39-012	N/A	0.000
CF39-013	N/A	0.000

N/A – Not applicable. Contaminants may be present but at concentrations below background means plus two standard deviations or RL.

Table 5
RFCA Tier II Sum of Ratios for IHSS Group 800-6 Subsurface Soil

Location	Tier II SOR Radionuclides	Tier II SOR Non-Radionuclides	Depth Interval
CE38-002	N/A	0.27	0.5'-2.5'
CE39-001	N/A	0.16	0.5'-2.5'
CE39-002	N/A	0.00	0.5'-2.5'
CE39-003	N/A	0.00	0.5'-2.5'
CE39-004	0.015	0.001	0.5'-2.5'
CF38-001	N/A	0.21	0.5'-2.5'
CF38-003	N/A	0.00	0.5'-2.5'
CF38-005	N/A	0.08	0.5'-2.5'
CF38-006	N/A	0.19	0.5'-2.5'
CF38-007	N/A	0.09	0.5'-2.5'
CF38-008	N/A	0.06	0.5'-2.5'
CF39-001	N/A	0.01	0.5'-2.5'
CF39-002	0.009	0.058	0.5'-0.75'
CF39-004	0.01	0.157	0.5'-2.5'
CF39-005	N/A	0.000	0.5'-1.8'
CF39-006	N/A	0.23	0.5'-2.5'
CF39-007	N/A	0.19	0.5'-2.5'
CF39-008	N/A	0.26	0.5'-2.5'
CF39-009	N/A	0.14	0.5'-2.5'
CF39-010	N/A	0.048	0.5'-1.25'
CF39-011	N/A	0.26	0.5'-2.5'
CF39-012	N/A	0.17	0.5'-2.5'
CF39-013	N/A	0.41	0.5'-2.5'
CF38-010	N/A	0.00	4.5'-6.5'
CF38-015	N/A	0.00	4.5'-6.5'
CF38-025	N/A	0.99	4.5'-6.5'
CF38-027	N/A	0.24	4.5'-6.5'
CF38-019	N/A	0.27	6.5'-8.5'
CF38-020	N/A	0.01	6.5'-8.5'
CF38-021	N/A	0.04	2.5'-4.5'
CF38-014	N/A	0.00	6.5'-8.5'
CF38-011	N/A	0.09	6.5'-8.5'
CF38-024	N/A	0.50	6.5'-8.5'

N/A – Not applicable. Contaminants may be present but at concentrations below background means plus two standard deviations or RL.

3.0 ACCELERATED ACTION

Accelerated action objectives were developed and described in ER RSOP Notification #02-02 (DOE 2002b). ER RSOP remedial action objectives include the following:

1. Provide a remedy consistent with the RFETS goal of protection of human health and the environment;
2. Provide a remedy that minimizes the need for long-term maintenance and institutional or engineering controls; and
3. Minimize the spread of contaminants during implementation of accelerated actions.

The accelerated action remediation goals for IHSS Group 800-6 include the following:

1. Remove the UBC 889 floor slab, which will be dispositioned in accordance with the RSOP for Recycling Concrete (DOE 1999a);
2. Remove two concrete sumps (Tank 28);
3. Remove RCRA Interim Status Tank 40 (emptied, rinsed, and foamed in July 1996);
4. Remove the tank/sump beneath the eastern portion of the B889 slab if contaminated above RFCA Tier I ALs or if within 3 feet of the surface;
5. Remove portions of OPWL P10 that are beneath the slab and within IHSS 800-164.3;
6. Potentially remove portions of New Process Waste Line (NPWL) and Valve Vault 4 within IHSS 800-164.3 to as close to Valve Vaults 3, 5, and 6 as possible; and
7. Remediate surface and subsurface soil contamination to below RFCA Tier I ALs.

Accelerated action activities were conducted between May 8 and October 16, 2002. Start and end dates of significant activities are listed in Table 6. Key components associated with the accelerated action are shown in Figure 6. Photographs of site activities are provided in Appendix A.

Table 6
Dates of Accelerated Action Activities

Activity	Start Date	End Date	Duration
Characterization Sampling	May 8, 2002	October 16, 2002	5 months
Removal Activities	June 7, 2002	June 27, 2002	14 Days
Backfill Excavations	May 22, 2002	July 3, 2002	31 Days
Reseed	July 18, 2002	July 18, 2002	1 Day

3.1 Removal Activities

Accelerated action objectives were achieved, except those associated with IHSS 800-164.3. Portions of the NPWL and Valve Vault 4 within IHSS 164.3 were not removed as part of this action. The NPWL and valve vaults will be addressed based on site-wide decisions regarding the NPWL and valve vaults. Any related work and sampling results will be documented in another closeout report at a later date. Removal activities are described below.

Soil within excavations was sampled and found to be uncontaminated (refer to Sections 2.4 – 2.6). Therefore, no soil that was sampled was removed. Excavations were then backfilled, and the area was graded and seeded (refer to Section 10.0). Documentation regarding approval to backfill is provided in ER Regulatory Contact Records dated May 14, 2002, May 21, 2002, and September 11, 2002 (refer to Appendix B). Approximately 70 cubic yards of fill was brought to the project site. Approximately 330 cubic yards of topsoil was brought to the project site.

Building 889 Slab, Sumps, Air Ducts, and Underground Utilities

The Building 889 slab was removed, as well as the footer walls, footers, and portions of the concrete pillars (i.e., the top 5 ft). These items were surveyed and disposed of at an off-site sanitary landfill. Because the slab surface contained paint, it was classified as Polychlorinated Biphenyl (PCB) Bulk Product Waste. The two Tank 28 sumps (exhaust pits) were sprayed with Instacote™ and disposed of as low level radioactive waste. The four smaller sumps and the trough connecting all the sumps were disposed of as low level radioactive waste. Underground utilities encountered (e.g., utility alarm, communication, and electric lines) were surveyed, and based on results, disposed of as sanitary waste.

Two large, transite air ducts (24-inch outer diameter) were also removed (approximately 40 ft). Prior to removal, holes were made into the ducts, and a large amount of water was found in each (a total of approximately 900 gallons). This water was pumped to a poly tank and sampled. Low levels of radioactivity and VOCs were detected, and based on results, the water was taken to the Building 891 wastewater treatment plant. A black tarry sediment also was found in the ducts. This material was sampled and found to also contain low levels of radioactivity and VOCs. The material was not removed from the ducts. Based on process knowledge and analytical results, the ducts were classified as asbestos containing material (ACM) and non-hazardous, low level radioactive waste. They were filled with foam and disassembled, and the ends were wrapped in plastic sheeting.

Waste Lines

A portion of line P-10, which is part of the OPWL and made of stainless steel, was tapped and drained, filled with epoxy, and removed. The portion removed included the portion under the Building 889 slab, the portion going to Tank 40, and the portion going to an area southwest of Valve Vault 4 (refer to Figure 8). The end of the portion remaining was filled with grout (2 ft into the line). The removed section was cut up and placed in a low-level radioactive waste container. The container was then filled with foam.

An 8-foot section of metal housing around the NPWL (RCRA Unit 40) adjacent to Building 889 was removed. The housing was disposed of as low level radioactive waste. The remaining line consists of a high-density polyethylene (HDPE) line in which the actual waste line resides. The waste line is polyvinyl chloride (PVC) pipe. The waste line was capped, and the space between the waste line and the HDPE line was filled with grout. The disposition of the waste line will be determined as part of the Building 865 D&D Project.

Tank/Sump Beneath the Eastern Portion of the Building 889 Slab and Tank 40

The tank/sump located beneath the eastern portion of Building 889 was removed. No pipes were attached. It had been previously filled with concrete. After the tank had been removed, it was broken up and surveyed. Based on survey results, the debris was disposed of at an off-site sanitary landfill.

Tank 40 was sprayed with Instacote™ and removed. The two tanks within the structure had been previously emptied and rinsed, and the entire structure foamed in 1996. The upper portion of the structure had been previously surveyed and classified as sanitary waste. The debris from the upper portion was disposed of at an off-site sanitary landfill. The remainder of the vault contained two tanks and was disposed of as low level radioactive waste based on previous survey data.

Following the excavation of Tank 40, groundwater, with an oily layer on top, was observed at the bottom of the excavation. A sample was collected and analyzed, and results indicated the presence of various polyaromatic hydrocarbons. Based on the results, the material may be diesel fuel. Using the consultative process, CDPHE also agreed that the diesel presented no current or future contamination concern, and approved backfilling the excavation (refer to Appendix B).

4.0 CONFIRMATION SAMPLING

Because all results from characterization sampling indicate no contamination above RFCA Tier II Als, no soils that were sampled were removed. Therefore, there was no need to conduct confirmation sampling to ensure that residual contaminant concentrations were below ALs.

5.0 RCRA UNIT CLOSURE

Two tanks, which were part of the OPWL system and regulated under the Colorado Hazardous Waste Act (CHWA), and a portion of the NPWL, also regulated under the CHWA, were removed (refer to Figure 6).

- Tank 28, which consisted of two concrete sumps (exhaust pits) within the slab, was sprayed with "Instacote™" and disposed of as low level radioactive waste. Process knowledge was used to determine that the debris was not radioactive mixed waste.
- Tank 40 had been previously emptied, rinsed and foamed in 1996. The upper vault also had been previously surveyed and classified as sanitary waste. The vault debris was sent to an off-site sanitary landfill. The two tanks were disposed of as low level radioactive waste.

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- An 8-foot section of metal housing around the NPWL (RCRA Unit 40) adjacent to Building 889 was removed. The remaining line consists of a HDPE line in which the actual waste line resides. The waste line is PVC pipe. The waste line was capped, and the space between the waste line and the HDPE line was filled with grout. The disposition of the waste line will be determined as part of the Building 865 Decontamination and Decommissioning (D&D) Project.

6.0 STEWARDSHIP ANALYSIS

The IHSS Group 800-6 stewardship evaluation was conducted through ongoing consultation with the regulatory agencies. Frequent informal project updates, e-mails, and telephone and personal contact occurred throughout the project. Documentation associated with these contacts is in Appendix B.

6.1 Current Site Conditions

As discussed in Section 3.1, accelerated actions at IHSS Group 800-6 consisted of the excavation of the Building 889 slab, footers, footer walls, upper portions of concrete pillars, sumps and tanks, a small portion of the NPWL, and a large portion of the OPWL in the area (Figure 6). Based on the accelerated action, the following conditions exist at IHSS Group 800-6:

- Potential sources of contamination that existed in IHSS Group 800-6 (i.e., the Building 889 slab and Tank 40) were removed.
- Portions of the NPWL and Valve Vault 4 within IHSS 164.3 were not removed (Figure 6) but will be addressed as part of IHSS Group 000-4.
- Surface and subsurface contaminant concentrations in soil are greater than background means plus two standard deviations or detection limits throughout the IHSS Group.
- All excavated areas within IHSS Group 800-6 were backfilled. Excavated soil was used as backfill in the excavation from which it was removed.
- The site was covered with approximately 6 inches of soil and revegetated.

6.2 Near Term Management Recommendations

Because residual contaminant concentrations are low and potential contaminant sources were removed, mitigated or found not to have existed, no specific near-term management techniques are required. Potential contaminant sources and pathways have been removed. Contaminant concentrations in soil remaining at IHSS Group 800-6 do not trigger any further accelerated action. Near-term recommendations include the following:

- Excavation at the site will continue to be controlled through the Site Soil Disturbance Permit process;
- Fencing and signs restricting access will be posted to minimize disturbance to newly-revegetated areas; and
- Site access and security controls and the Soil Disturbance Permit process will remain in place pending implementation of long-term controls.

6.3 Long Term Stewardship Recommendation

Based on remaining environmental conditions at IHSS Group 800-6, no specific long-term stewardship activities are recommended for IHSS Group 800-6 beyond the generally applicable Site requirements that may be imposed on this area in the future, which are dependent upon the final remedy selected. Institutional controls that will be used as appropriate for this area include the following:

- Prohibitions on construction of buildings in the IA;
- Restrictions on excavation or other soil disturbance; and
- Prohibitions on groundwater pumping in the area of IHSS Group 800-6.

No specific engineered controls are recommended as a result of the conditions remaining in IHSS Group 800-6.

No specific environmental monitoring is recommended as a result of the conditions remaining in IHSS Group 800-6.

No specific institutional or physical controls, such as fences are recommended as a result of the conditions remaining in IHSS Group 800-6.

This closeout report and associated documentation, including the references in Section 13, will be retained as part of the Rocky Flats administrative record file. These specific long-term stewardship recommendations will also be summarized in the Rocky Flats *Long Term Stewardship Strategy*.

IHSS Group 800-6 will be evaluated as part of the Sitewide Comprehensive Risk Assessment, which is part of the RCRA Facility Investigation/Remedial Investigation (RFI/RI) and Corrective Measures Study/Feasibility Study (CMS/FS) that will be conducted for the Site. The need for and extent of any, more general, long-term stewardship activities will also be analyzed in RFI/RI and CMS/FS and will be proposed as part of the preferred alternative in the Proposed Plan for the Site. Institutional controls and other long-term stewardship requirements for Rocky Flats will ultimately be contained in the Corrective Action Decision/Record of Decision, in any post-closure Colorado Hazardous Waste Act permit that may be required, and in any post-RFCA agreement.

7.0 DEVIATIONS FROM THE ER RSOP

All accelerated action objectives were achieved, except those associated with IHSS 800-164.3. Portions of the NPWL and Valve Vault 4 within IHSS 164.3 were not removed as part of this action. The NPWL and valve vaults will be addressed based on site-wide decisions regarding the NPWL and valve vaults. Any related work and sampling results will be documented in another closeout report at a later date.

8.0 POST-REMEDATION CONDITIONS

Post remediation conditions at UBC 889, Tanks 28 and 40, and IHSS 800-164.3 are described below.

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8.1 UBC 889

The Building 889 slab, footing walls, and footers were removed, as well as the top five feet of the concrete pillars. The lower portions of the pillars, therefore, remain. Sumps, waste lines, transite ducts, and underground utilities also were removed, including the tank/sump beneath the eastern portion of the Building 889 slab. Most of the NPWL located east of the Building 889 site remains, including Valve Vault 4, as well as the portion traversing IHSS 164.3 (refer to Figure 6). The remaining line consists of a HDPE line in which the actual waste line resides. The waste line is PVC pipe. The waste line was capped, and the space between the waste line and the HDPE line was filled with grout. The disposition of the waste line will be determined as part of the Site-wide NPWL strategy. Portions of the OPWL also remain. Sampling results from the soil beneath the items removed (e.g., slab, footing walls, footers, sumps, and waste lines) indicate that all contaminant concentrations are less than RFCA Tier II ALs and the proposed WRW ALs.

8.2 OPWL Tanks 28 and 40

Tanks 28 and 40 were removed, as well as a portion of OPWL P-10. This line was removed to an area southwest of Valve Vault 4 (refer to Figure 6). The end of the portion remaining was filled with grout (2 ft into the line). Sampling results from the soil beneath the items removed (i.e., tanks, sumps and waste lines) indicate no contaminant concentrations above RFCA Tier II ALs and the proposed WRW ALs. There was one elevated surface beryllium concentration found prior to the accelerated action, but it did not exceed the Tier II AL by much (2.1 mg/kg vs 1.04 mg/kg) and was considerably less than the Tier I AL (104 mg/kg) (refer to Section 2.5). In addition, the sample location where the elevated concentration was found is not longer representative.

8.3 IHSS 800-164.3

Sampling results in the IHSS indicate that all contaminant concentrations are less than RFCA Tier II ALs and the proposed WRW ALs. Portions of the NPWL and Valve Vault 4 within IHSS 164.3 were not removed as part of this action. The NPWL and valve vaults will be addressed based on site-wide decisions regarding the NPWL and valve vaults. Any related work and sampling results will also be documented in another closeout report at a later date.

8.4 Residual Contamination

Residual contamination was determined based on pre-accelerated action and accelerated action characterization. Pre-accelerated action characterization indicate no contaminant concentrations in surface and subsurface soils greater than RFCA Tier II ALs, except for beryllium in the surface soil adjacent to Tank 40. However, as stated in Section 8.2, the sample is no longer representative. Accelerated action characterization indicate no contaminant concentrations in surface and subsurface soils greater than RFCA Tier II ALs. Concentrations greater than background means plus two standard deviations or RLs at IHSS Group 800-6 are presented in Table 7 and shown on Figures 7 and 8. Pipelines that were not removed during the accelerated action are shown on Figure 6. As discussed in Section 3.1, pipeline ends were grouted.

Soil concentrations also were below the proposed Wildlife Refuge Worker Action Levels (DOE, CDPHE, EPA 2002). Pre-accelerated action and accelerated action analytical results are compared with the WRW ALs in Appendix D. Only results for analytes with ALs are included, and only results greater than background means plus two standard deviations or RLs are included.

SORs for Tier I and Tier II action levels, based on pre-accelerated action and accelerated action data, are listed in Tables 8 and 9 for surface and subsurface soils, respectively. Data from sample locations that are no longer representative were excluded. As shown, SORs are less than 1. SORs for radionuclides and non-radionuclides are presented in Figure 9.

9.0 WASTE MANAGEMENT

Waste from the IHSS Group 800-6 accelerated action consisted of concrete, asphalt, soil, and pipeline. Asphalt, underground utilities, and uncontaminated concrete were disposed of as sanitary waste. Because the slab surface contained paint and caulk, it was classified and disposed of as PCB Bulk Product Waste. Contaminated concrete was loaded into metal waste boxes for disposal as low-level waste. The two Tank 28 sumps and the two Tank 40 tanks were first sprayed with Instacote™. Pipeline was placed in metal waste containers for disposal as low-level waste (LLW). These containers were then filled with foam. The transite air ducts were filled with foam, cut up, and disposed of as non-hazardous low-level radioactive waste. Water found in the ducts was pumped into poly tanks and trucked to the Building 891 wastewater treatment plant. Waste types, volumes, and disposition are presented in Table 10. Waste characterization data are summarized in Table 11.

10.0 SITE RECLAMATION

All excavated areas within IHSS Group 800-6 were backfilled. Excavated soil was used as backfill in the excavation from which it was removed. An additional 70 cubic yards (approximate) of fill was brought to the project site for use. In addition, approximately 330 cubic yards of topsoil was brought to the project site to bring excavated areas up to grade. The area was rough graded before the topsoil was distributed over the site. The topsoil was graded, then scarified, and a seed mix consisting of Canada bluegrass was

Table 7
Residual Contamination at IHSS Group 800-6

Location	Analyte	Media	Results	Units	Background	Detection Limit	Tier I AL	Tier II AL
SED40196	Americium-241	Surface Soil	1.269	pci/g	0.0227	0.023	215	38
SED40296	Americium-241	Surface Soil	1.833	pci/g	0.0227	0.01	215	38
SED40396	Americium-241	Surface Soil	1.453	pci/g	0.0227	0.01	215	38
SED40396	Americium-241	Surface Soil	1.85	pci/g	0.0227	0.013	215	38
SS462294	Americium-241	Surface Soil	0.024	pci/g	0.0227	0.01	215	38
SS462394	Americium-241	Surface Soil	0.038	pci/g	0.0227	0.009	215	38
SS462494	Americium-241	Surface Soil	0.045	pci/g	0.0227	0.02	215	38
SS462594	Americium-241	Surface Soil	0.048	pci/g	0.0227	0.02	215	38
SS462694	Americium-241	Surface Soil	0.042	pci/g	0.0227	0.01	215	38
SS462794	Americium-241	Surface Soil	0.024	pci/g	0.0227	0.007	215	38
SS462894	Americium-241	Surface Soil	0.058	pci/g	0.0227	0.02	215	38
SS463294	Americium-241	Surface Soil	0.024	pci/g	0.0227	0.007	215	38
SS463694	Americium-241	Surface Soil	0.047	pci/g	0.0227	0.01	215	38
SS463794	Americium-241	Surface Soil	0.09	pci/g	0.0227	0.01	215	38
SS463894	Americium-241	Surface Soil	0.11	pci/g	0.0227	0.002	215	38
SS464194	Americium-241	Surface Soil	0.082	pci/g	0.0227	0.007	215	38
SS464294	Americium-241	Surface Soil	0.29	pci/g	0.0227	0.005	215	38
SS464594	Americium-241	Surface Soil	0.052	pci/g	0.0227	0.01	215	38
SS464594	Americium-241	Surface Soil	0.081	pci/g	0.0227	0.006	215	38
SS464694	Americium-241	Surface Soil	0.027	pci/g	0.0227	0.008	215	38
SS464694	Americium-241	Surface Soil	0.046	pci/g	0.0227	0.01	215	38
SS465294	Americium-241	Surface Soil	0.16	pci/g	0.0227	0.01	215	38
SS465394	Americium-241	Surface Soil	0.084	pci/g	0.0227	0.01	215	38
SS465794	Americium-241	Surface Soil	0.04	pci/g	0.0227	0.007	215	38
SS465994	Americium-241	Surface Soil	0.24	pci/g	0.0227	0.01	215	38
SS466094	Americium-241	Surface Soil	0.36	pci/g	0.0227	0.009	215	38
SS466294	Americium-241	Surface Soil	0.034	pci/g	0.0227	0.02	215	38
SED01695	Benzo(a)pyrene	Surface Soil	34	ug/kg	NA	350	61400	614
SED40196	Plutonium-239/240	Surface Soil	6.602	pci/g	0.066	0.005	1429	252
SED40296	Plutonium-239/240	Surface Soil	5.717	pci/g	0.066	0.014	1429	252
SED40396	Plutonium-239/240	Surface Soil	5.523	pci/g	0.066	0.019	1429	252
SED40396	Plutonium-239/240	Surface Soil	5.672	pci/g	0.066	0.005	1429	252
SS462094	Plutonium-239/240	Surface Soil	0.1	pci/g	0.066	0.006	1429	252

Location	Analyte	Media	Results	Units	Background	Detection Limit	Tier I AL	Tier II AL
SS462294	Plutonium-239/240	Surface Soil	0.082	pci/g	0.066	0.003	1429	252
SS462394	Plutonium-239/240	Surface Soil	0.12	pci/g	0.066	0.005	1429	252
SS462494	Plutonium-239/240	Surface Soil	0.11	pci/g	0.066	0.003	1429	252
SS462594	Plutonium-239/240	Surface Soil	0.13	pci/g	0.066	0.003	1429	252
SS462694	Plutonium-239/240	Surface Soil	0.069	pci/g	0.066	0.005	1429	252
SS462794	Plutonium-239/240	Surface Soil	0.12	pci/g	0.066	0.003	1429	252
SS462894	Plutonium-239/240	Surface Soil	0.12	pci/g	0.066	0.006	1429	252
SS463094	Plutonium-239/240	Surface Soil	0.098	pci/g	0.066	0.007	1429	252
SS463194	Plutonium-239/240	Surface Soil	0.1	pci/g	0.066	0.01	1429	252
SS463694	Plutonium-239/240	Surface Soil	0.17	pci/g	0.066	0.005	1429	252
SS463794	Plutonium-239/240	Surface Soil	0.4	pci/g	0.066	0.004	1429	252
SS463894	Plutonium-239/240	Surface Soil	0.32	pci/g	0.066	0.007	1429	252
SS464194	Plutonium-239/240	Surface Soil	0.31	pci/g	0.066	0.005	1429	252
SS464294	Plutonium-239/240	Surface Soil	1.1	pci/g	0.066	0.005	1429	252
SS464594	Plutonium-239/240	Surface Soil	0.22	pci/g	0.066	0.009	1429	252
SS464694	Plutonium-239/240	Surface Soil	0.12	pci/g	0.066	0.006	1429	252
SS464894	Plutonium-239/240	Surface Soil	0.067	pci/g	0.066	0.01	1429	252
SS465194	Plutonium-239/240	Surface Soil	0.089	pci/g	0.066	0.004	1429	252
SS465194	Plutonium-239/240	Surface Soil	0.089	pci/g	0.066	0.01	1429	252
SS465294	Plutonium-239/240	Surface Soil	0.75	pci/g	0.066	0.006	1429	252
SS465394	Plutonium-239/240	Surface Soil	0.4	pci/g	0.066	0.004	1429	252
SS465794	Plutonium-239/240	Surface Soil	0.17	pci/g	0.066	0.01	1429	252
SS465994	Plutonium-239/240	Surface Soil	1.4	pci/g	0.066	0.004	1429	252
SS466094	Plutonium-239/240	Surface Soil	2.2	pci/g	0.066	0.006	1429	252
SS466294	Plutonium-239/240	Surface Soil	0.13	pci/g	0.066	0.009	1429	252
SS466594	Plutonium-239/240	Surface Soil	0.13	pci/g	0.066	0.005	1429	252
SS463394	Uranium-235	Surface Soil	0.18	pci/g	0.0939	0.07	135	24
SS463494	Uranium-235	Surface Soil	0.14	pci/g	0.0939	0.07	135	24
SS463794	Uranium-235	Surface Soil	0.21	pci/g	0.0939	0.07	135	24
SS463894	Uranium-235	Surface Soil	0.4	pci/g	0.0939	0.03	135	24
SS464294	Uranium-235	Surface Soil	0.18	pci/g	0.0939	0.07	135	24
SS464594	Uranium-235	Surface Soil	0.12	pci/g	0.0939	0.03	135	24
SS464594	Uranium-235	Surface Soil	0.16	pci/g	0.0939	0.03	135	24
SS463394	Uranium-238	Surface Soil	4.7	pci/g	2	0.07	586	103
SS463494	Uranium-238	Surface Soil	5.1	pci/g	2	0.07	586	103

Location	Analyte	Media	Results	Units	Background	Detection Limit	Tier I AL	Tier II AL
SS463794	Uranium-238	Surface Soil	11	pci/g	2	0.08	586	103
SS463894	Uranium-238	Surface Soil	14	pci/g	2	0.06	586	103
SS464294	Uranium-238	Surface Soil	3.6	pci/g	2	0.07	586	103
SS464594	Uranium-238	Surface Soil	3.2	pci/g	2	0.04	586	103
CF38-025	Methylene Chloride	Subsurface Soil	5.7	ug/kg	NA	0.88	578	5.78
CF38-024	Benzo(a)anthracene	Subsurface Soil	50	ug/kg	NA	46	160000	1600
CF38-024	Bis(2-ethylhexyl)phthalate	Subsurface Soil	1900	ug/kg	NA	77	311000000	3110000
CF38-024	Carbon Disulfide	Subsurface Soil	780	ug/kg	NA	1.3	988000	9880
CF38-024	Ethylbenzene	Subsurface Soil	1200	ug/kg	NA	930	932000	9320
CF38-024	Naphthalene	Subsurface Soil	6300	ug/kg	NA	59	10100000	101000
CF38-024	Naphthalene	Subsurface Soil	12000	ug/kg	NA	59	10100000	101000
CF38-024	Pyrene	Subsurface Soil	57	ug/kg	NA	45	397000000	3970000
CF38-024	Total Xylenes	Subsurface Soil	7900	ug/kg	NA	36	9740000	97400
CF38-021	Acetone	Subsurface Soil	13	ug/kg	NA	5.2	27200000	272000
CF38-021	Bis(2-ethylhexyl)phthalate	Subsurface Soil	160	ug/kg	NA	77	311000000	3110000
CF38-021	Tetrachloroethene	Subsurface Soil	1.1	ug/kg	NA	1.1	3150	31.5
CF38-020	Naphthalene	Subsurface Soil	530	ug/kg	NA	59	10100000	101000
CF38-020	Phenol	Subsurface Soil	160	ug/kg	NA	90	3750000	37500
CF38-020	Total Xylenes	Subsurface Soil	82	ug/kg	NA	36	9740000	97400
CF38-019	1,2-Dichloropropane	Subsurface Soil	2.2	ug/kg	NA	1.7	1130	11.3
CF38-019	Acetone	Subsurface Soil	820	ug/kg	NA	6.4	27200000	272000
CF38-019	Bis(2-Ethylhexyl)Phthalate	Subsurface Soil	120	ug/kg	NA	99	311000000	3110000
CF38-019	Carbon Disulfide	Subsurface Soil	3.4	ug/kg	NA	1.3	988000	9880
CF38-019	Tetrachloroethene	Subsurface Soil	2.1	ug/kg	NA	1.4	3150	31.5
CF38-015	Acetone	Subsurface Soil	5.2	ug/kg	NA	4.9	27200000	272000
CF38-015	Bis(2-ethylhexyl)phthalate	Subsurface Soil	96	ug/kg	NA	75	311000000	3110000
CF38-015	Copper	Subsurface Soil	48.4	mg/kg	38.21	0.16	71100	71100
CF38-014	Acetone	Subsurface Soil	5.7	ug/kg	NA	5.5	27200000	272000
CF38-014	Strontium	Subsurface Soil	268	mg/kg	48.94	400	1000000	1000000
CF39-013	Benzo(a)anthracene	Subsurface Soil	72	ug/kg	NA	46	160000	1600
CF39-013	Chrysene	Subsurface Soil	98	ug/kg	NA	62	16000000	160000
CF39-013	Fluoranthene	Subsurface Soil	200	ug/kg	NA	99	537000000	5370000
CF39-013	Pyrene	Subsurface Soil	230	ug/kg	NA	47	397000000	3970000
CF39-013	Strontium	Subsurface Soil	214	mg/kg	48.94	400	1000000	1000000
CF39-013	Strontium	Surface Soil	79.3	mg/kg	48.94	400	1000000	1000000

Location	Analyte	Media	Results	Units	Background	Detection Limit	Tier I AL	Tier II AL
CF39-012	Methylene Chloride	Subsurface Soil	0.96	ug/kg	NA	0.8	578	5.78
CF38-011	Acetone	Subsurface Soil	30	ug/kg	NA	5.6	27200000	272000
CF39-011	Pyrene	Subsurface Soil	92	ug/kg	NA	46	397000000	3970000
CF38-011	Strontium	Subsurface Soil	224	mg/kg	48.94	400	1000000	1000000
CF38-011	Tetrachloroethene	Subsurface Soil	2.7	ug/kg	NA	1.2	3150	31.5
CF38-010	Acetone	Subsurface Soil	16	ug/kg	NA	4.7	27200000	272000
CF39-010	Aluminum	Surface Soil	18000	mg/kg	16902	12	1000000	1000000
CF39-010	Aluminum	Surface Soil	18000	mg/kg	16902	2.4	1000000	1000000
CF39-010	Aluminum	Surface Soil	18000	mg/kg	16902	12	1000000	1000000
CF39-010	Antimony	Surface Soil	0.64	mg/kg		0.51	768	768
CF39-010	Calcium	Surface Soil	6600	mg/kg	4467	23		
CF39-010	Chromium	Surface Soil	20	mg/kg	16.99	0.58	44300	4410
CF39-010	Chromium	Surface Soil	20	mg/kg	16.99	0.084	44300	4410
CF39-010	Chromium	Surface Soil	20	mg/kg	16.99	0.58	44300	4410
CF39-010	Cobalt	Surface Soil	12	mg/kg	10.91	1.2	115000	115000
CF39-010	Cobalt	Surface Soil	12	mg/kg	10.91	0.084	115000	115000
CF39-010	Cobalt	Surface Soil	12	mg/kg	10.91	1.2	115000	115000
CF39-010	Copper	Surface Soil	30	mg/kg	18.06	2.3	71100	71100
CF39-010	Copper	Surface Soil	30	mg/kg	18.06	0.22	71100	71100
CF39-010	Copper	Surface Soil	30	mg/kg	18.06	2.3	71100	71100
CF39-010	Lithium	Surface Soil	14	mg/kg	11.55	5.8	38400	38400
CF39-010	Lithium	Surface Soil	14	mg/kg	11.55	0.13	38400	38400
CF39-010	Lithium	Surface Soil	14	mg/kg	11.55	5.8	38400	38400
CF39-010	Potassium	Surface Soil	3200	mg/kg	2967.2	350		
CF39-010	Tin	Surface Soil	4	mg/kg		0.36	1000000	1000000
CF39-009	Methylene Chloride	Subsurface Soil	0.82	ug/kg	NA	0.8	578	5.78
CF39-009	Strontium	Surface Soil	86.6	mg/kg	48.94	400	1000000	1000000
CF38-008	Acetone	Subsurface Soil	110	ug/kg	NA	5.5	27200000	272000
CF38-008	Barium	Surface Soil	194	mg/kg	141.26	0.041	133000	133000
CF38-008	Benzo(a)anthracene	Subsurface Soil	77	ug/kg	NA	44	160000	1600
CF38-008	Chromium	Subsurface Soil	88.1	mg/kg	68.27	0.059	44300	4410
CF38-008	Chrysene	Subsurface Soil	93	ug/kg	NA	60	16000000	160000
CF38-008	Fluoranthene	Subsurface Soil	160	ug/kg	NA	95	537000000	5370000

Location	Analyte	Media	Results	Units	Background	Detection Limit	Tier I AL	Tier II AL
CF38-008	Manganese	Surface Soil	803	mg/kg	365.08	0.035	83600	83600
CF38-008	Mercury	Subsurface Soil	4.9	mg/kg	1.52	0.014	576	576
CF38-008	Nickel	Surface Soil	23.8	mg/kg	14.91	0.68	38400	38400
CF38-008	Pyrene	Subsurface Soil	160	ug/kg	NA	45	397000000	3970000
CF38-008	Strontium	Surface Soil	75.2	mg/kg	48.94	400	1000000	1000000
CF38-008	Zinc	Surface Soil	391	mg/kg	73.76	0.22	576000	576000
CF39-008	Zinc	Surface Soil	91.4	mg/kg	73.76	0.22	576000	576000
CF38-007	Acetone	Subsurface Soil	5.5	ug/kg	NA	4.9	27200000	272000
CF39-007	Acetone	Subsurface Soil	5.5	ug/kg	NA	4.6	27200000	272000
CF38-007	Copper	Subsurface Soil	69.2	mg/kg	38.21	0.16	71100	71100
CF38-007	Copper	Surface Soil	39.6	mg/kg	18.06	0.16	71100	71100
CF38-007	Iron	Surface Soil	22800	mg/kg	18037	1.5	576000	576000
CF38-007	Manganese	Surface Soil	418	mg/kg	365.08	0.035	83600	83600
CF39-007	Methylene Chloride	Subsurface Soil	1.1	ug/kg	NA	0.8	578	5.78
CF38-007	Nickel	Surface Soil	18.6	mg/kg	14.91	0.69	38400	38400
CF38-007	Strontium	Surface Soil	106	mg/kg	48.94	400	1000000	1000000
CF39-007	Strontium	Surface Soil	66.9	mg/kg	48.94	400	1000000	1000000
CF38-007	Tetrachloroethene	Subsurface Soil	2.6	ug/kg	NA	1.1	3150	31.5
CF38-007	Vanadium	Subsurface Soil	90.8	mg/kg	88.49	0.25	13400	13400
CF38-007	Vanadium	Surface Soil	60.7	mg/kg	45.59	0.26	13400	13400
CF38-006	Cobalt	Surface Soil	11.4	mg/kg	10.91	0.082	115000	115000
CF38-006	Copper	Subsurface Soil	65.8	mg/kg	38.21	0.16	71100	71100
CF38-006	Copper	Surface Soil	73	mg/kg	18.06	0.16	71100	71100
CF38-006	Iron	Surface Soil	31300	mg/kg	18037	1.5	576000	576000
CF38-006	Manganese	Surface Soil	556	mg/kg	365.08	0.034	83600	83600
CF38-006	Methylene Chloride	Subsurface Soil	1.1	ug/kg	NA	0.87	578	5.78
CF38-006	Nickel	Surface Soil	24.6	mg/kg	14.91	0.67	38400	38400
CF39-006	Pyrene	Subsurface Soil	64	ug/kg	NA	43	397000000	3970000
CF38-006	Strontium	Surface Soil	131	mg/kg	48.94	400	1000000	1000000
CF39-006	Strontium	Surface Soil	64.8	mg/kg	48.94	400	1000000	1000000
CF38-006	Vanadium	Surface Soil	76.9	mg/kg	45.59	0.26	13400	13400
CF39-006	Vanadium	Surface Soil	53.8	mg/kg	45.59	0.27	13400	13400
CF39-005	2,4,6-Tribromophenol	Surface Soil	2900	ug/kg	N/A	0		
CF39-005	2-Fluorobiphenyl	Surface Soil	2100	ug/kg	N/A	0		
CF39-005	2-Fluorophenol	Surface Soil	3700	ug/kg	N/A	0		

Location	Analyte	Media	Results	Units	Background	Detection Limit	Tier I AL	Tier II AL
CF39-005	4-Bromofluorobenzene	Surface Soil	78.41377	ug/kg	N/A	0		
CF38-005	Benzo(a)anthracene	Subsurface Soil	63	ug/kg	NA	41	160000	1600
CF39-005	Calcium	Surface Soil	140000	mg/kg	39382.27	26		
CF38-005	Chrysene	Subsurface Soil	67	ug/kg	NA	56	16000000	160000
CF38-005	Copper	Subsurface Soil	56.6	mg/kg	38.21	0.16	71100	71100
CF38-005	Copper	Surface Soil	52.3	mg/kg	18.06	0.17	71100	71100
CF38-005	Fluoranthene	Subsurface Soil	160	ug/kg	NA	88	537000000	5370000
CF39-005	Fluorobenzene	Surface Soil	66.31747	ug/kg	N/A	0		
CF38-005	Iron	Surface Soil	23400	mg/kg	18037	1.6	576000	576000
CF38-005	Manganese	Surface Soil	489	mg/kg	365.08	0.037	83600	83600
CF38-005	Nickel	Surface Soil	18.1	mg/kg	14.91	0.72	38400	38400
CF38-005	Pyrene	Subsurface Soil	150	ug/kg	NA	42	397000000	3970000
CF38-005	Strontium	Surface Soil	115	mg/kg	48.94	400	1000000	1000000
CF38-005	Tetrachloroethene	Subsurface Soil	1.2	ug/kg	NA	1.1	3150	31.5
CF38-005	Vanadium	Surface Soil	66.8	mg/kg	45.59	0.27	13400	13400
CF39-005	Xylenes, Total	Subsurface Soil	14.55	ug/kg		13	9740000	97400
CF39-005	Xylenes, Total	Surface Soil	14.55005	ug/kg	N/A	13	9740000	97400000
CE39-004	2,4,6-Tribromophenol	Surface Soil	3700	ug/kg	N/A	0		
CE39-004	2-Fluorobiphenyl	Surface Soil	2800	ug/kg	N/A	0		
CE39-004	2-Fluorophenol	Surface Soil	4400	ug/kg	N/A	0		
CE39-004	4-Bromofluorobenzene	Surface Soil	63.16986	ug/kg	N/A	0		
CF39-004	Acetone	Subsurface Soil	9.3	ug/kg	NA	4.6	27200000	272000
CE39-004	Calcium	Surface Soil	130000	mg/kg	4467	25		
CE39-004	Calcium	Surface Soil	120000	mg/kg	39382.27	25		
CE39-004	Fluorobenzene	Surface Soil	61.95554	ug/kg	N/A	0		
CE39-004	Lithium	Surface Soil	14	mg/kg	11.55	6.4	38400	38400
CE39-004	Lithium	Surface Soil	14	mg/kg	11.55	0.14	38400	38400
CE39-004	Lithium	Surface Soil	14	mg/kg	11.55	6.4	38400	38400
CE39-004	Magnesium	Surface Soil	4800	mg/kg	2849.3	25		
CF39-004	Methylene Chloride	Subsurface Soil	0.91	ug/kg	NA	0.8	578	5.78
CE39-004	Strontium	Surface Soil	140	mg/kg	48.94	1.3	1000000	1000000
CE39-004	Strontium	Surface Soil	140	mg/kg	48.94	0.064	1000000	1000000
CE39-004	Strontium	Surface Soil	140	mg/kg	48.94	1.3	1000000	1000000
CE39-004	Tin	Surface Soil	2.9	mg/kg		0.4	1000000	1000000

Location	Analyte	Media	Results	Units	Background	Detection Limit	Tier I AL	Tier II AL
CE39-004	U-235	Subsurface Soil	0.35	pci/g-dry	0.12	1	113	24
CE39-004	U-235	Surface Soil	0.35	pCi/g-	0.12	1	113	24
CF39-003	Barium	Surface Soil	147	mg/kg	141.26	0.043	133000	133000
CF38-003	Bis(2-ethylhexyl)phthalate	Subsurface Soil	1100	ug/kg	NA	74	311000000	3110000
CF39-003	Chromium	Subsurface Soil	91.8	mg/kg	68.27	0.059	44300	4410
CF38-003	Pyrene	Subsurface Soil	74	ug/kg	NA	43	397000000	3970000
CE39-003	Strontium	Surface Soil	95.4	mg/kg	48.94	400	1000000	1000000
CF38-003	Strontium	Surface Soil	75.2	mg/kg	48.94	400	1000000	1000000
CF39-003	Strontium	Surface Soil	78	mg/kg	48.94	400	1000000	1000000
CF39-002	2,4,6-Tribromophenol	Surface Soil	3500	ug/kg	N/A	0		
CF39-002	2-Fluorobiphenyl	Surface Soil	2400	ug/kg	N/A	0		
CF39-002	2-Fluorophenol	Surface Soil	4100	ug/kg	N/A	0		
CF39-002	4-Bromofluorobenzene	Surface Soil	55.9092	ug/kg	N/A	0		
CE39-002	Acetone	Subsurface Soil	5.2	ug/kg	NA	5	27200000	272000
CE39-002	Aluminum	Surface Soil	22100	mg/kg	16902	1.4	1000000	1000000
CF39-002	Aluminum	Surface Soil	23000	mg/kg	16902	11	1000000	1000000
CF39-002	Aluminum	Surface Soil	23000	mg/kg	16902	2.4	1000000	1000000
CF39-002	Aluminum	Surface Soil	23000	mg/kg	16902	11	1000000	1000000
CE39-002	Barium	Surface Soil	208	mg/kg	141.26	0.043	133000	133000
CF39-002	Calcium	Surface Soil	14000	mg/kg	4467	23		
CF39-002	Calcium	Surface Soil	64000	mg/kg	39382.27	25		
CF39-002	Chromium	Surface Soil	19	mg/kg	16.99	0.57	44300	4410
CF39-002	Chromium	Surface Soil	19	mg/kg	16.99	0.082	44300	4410
CF39-002	Chromium	Surface Soil	19	mg/kg	16.99	0.57	44300	4410
CF39-002	Cobalt	Surface Soil	15	mg/kg	10.91	1.1	115000	115000
CF39-002	Cobalt	Surface Soil	15	mg/kg	10.91	0.082	115000	115000
CF39-002	Cobalt	Surface Soil	15	mg/kg	10.91	1.1	115000	115000
CF39-002	Copper	Surface Soil	35	mg/kg	18.06	2.3	71100	71100
CF39-002	Copper	Surface Soil	35	mg/kg	18.06	0.22	71100	71100
CF39-002	Copper	Surface Soil	35	mg/kg	18.06	2.3	71100	71100
CF39-002	Fluorobenzene	Surface Soil	61.18319	ug/kg	N/A	0		
CF39-002	Lithium	Surface Soil	18	mg/kg	11.55	5.7	38400	38400
CF39-002	Lithium	Surface Soil	18	mg/kg	11.55	0.13	38400	38400
CF39-002	Lithium	Surface Soil	18	mg/kg	11.55	5.7	38400	38400

Location	Analyte	Media	Results	Units	Background	Detection Limit	Tier I AL	Tier II AL
CF39-002	Magnesium	Surface Soil	4000	mg/kg	2849.3	23		
CE38-002	Methylene Chloride	Subsurface Soil	1.4	ug/kg	NA	0.8	578	5.78
CE39-002	Nickel	Surface Soil	21.3	mg/kg	14.91	0.72	38400	38400
CF39-002	Nickel	Surface Soil	19	mg/kg	14.91	4.6	38400	38400
CF39-002	Nickel	Surface Soil	19	mg/kg	14.91	0.21	38400	38400
CF39-002	Nickel	Surface Soil	19	mg/kg	14.91	4.6	38400	38400
CF39-002	Potassium	Surface Soil	4100	mg/kg	2967.2	340		
CF39-002	Silver	Surface Soil	0.12	mg/kg		0.072	9610	9610
CE39-002	Strontium	Surface Soil	84.4	mg/kg	48.94	400	1000000	1000000
CF38-002	Strontium	Surface Soil	71.8	mg/kg	48.94	400	1000000	1000000
CE38-002	Tetrachloroethene	Subsurface Soil	1	ug/kg	NA	0.99	3150	31.5
CF39-002	Tin	Surface Soil	5	mg/kg		0.35	1000000	1000000
CF39-002	U-235	Subsurface Soil	0.22	pci/g-dry	0.12	1	113	24
CF39-002	U-235	Surface Soil	0.22	pCi/g	0.12	1	113	24
CE39-002	Vanadium	Surface Soil	49.4	mg/kg	45.59	0.27	13400	13400
CF39-002	Xylenes, Total	Subsurface Soil	25.68	ug/kg		12	9740000	97400
CF39-002	Xylenes, Total	Surface Soil	25.6847	ug/kg	N/A	12	9740000	97400000
CE39-001	Aluminum	Surface Soil	17500	mg/kg	16902	1.4	1000000	1000000
CF39-001	Barium	Subsurface Soil	800	mg/kg	289.38	0.042	133000	133000
CF39-001	Barium	Surface Soil	166	mg/kg	141.26	0.043	133000	133000
CE39-001	Methylene Chloride	Subsurface Soil	0.9	ug/kg	NA	0.82	578	5.78
CE38-001	Strontium	Surface Soil	55.1	mg/kg	48.94	400	1000000	1000000
CE39-001	Strontium	Surface Soil	89	mg/kg	48.94	400	1000000	1000000
CE39-001	Strontium	Surface Soil	90	mg/kg	48.94	400	1000000	1000000
CF39-001	Strontium	Surface Soil	94.6	mg/kg	48.94	400	1000000	1000000
42992	Copper	Surface Soil	20.7	mg/kg	18.06	5	71100	71100
42992	Plutonium-239/240	Surface Soil	0.025	pci/g	0.02	0.01	1088	252
42992	Strontium	Surface Soil	135	mg/kg	48.94	400	1000000	1000000
42992	Toluene	Subsurface Soil	210	ug/kg	NA	5	707000	7070
42992	Toluene	Subsurface Soil	83	ug/kg	NA	5	707000	7070
42992	Toluene	Subsurface Soil	140	ug/kg	NA	5	707000	7070

Table 8
Sum of Ratios for Surface Soils Based on Pre-Accelerated Action and
Accelerated Action Analytical Results

Location	Tier II SOR Radionuclides	Tier II SOR Non-Radionuclides
CE38-001	N/A	0.000
CE39-001	N/A	0.018
CE39-002	N/A	0.028
CE39-003	N/A	0.000
CF38-001	N/A	0.000
CF38-002	N/A	0.000
CF38-003	N/A	0.000
CF38-005	N/A	0.053
CF38-006	N/A	0.069
CF38-007	N/A	0.050
CF38-008	N/A	0.012
CF39-001	N/A	0.001
CF39-003	N/A	0.001
CF39-006	N/A	0.004
CF39-007	N/A	0.000
CF39-008	N/A	0.000
CF39-009	N/A	0.000
CF39-011	N/A	0.000
CF39-012	N/A	0.000
CF39-013	N/A	0.000
42992	N/A	0.000
SED01695	N/A	0.065
SED40196	0.060	N/A
SED40296	0.071	N/A
SED40396	0.131	N/A
SS462094	0.000	N/A
SS462294	0.001	N/A
SS462394	0.001	N/A
SS462494	0.002	N/A
SS462594	0.002	N/A
SS462694	0.001	N/A
SS462794	0.001	N/A
SS462894	0.002	N/A
SS463094	0.000	N/A
SS463194	0.000	N/A
SS463294	0.001	N/A
SS463394	0.053	N/A
SS463494	0.055	N/A
SS463694	0.002	N/A
SS463794	0.120	N/A
SS463894	0.157	N/A

Table 8
Sum of Ratios for Surface Soils Based on Pre-Accelerated Action and Accelerated Action Analytical Results

Location	Tier II SOR Radionuclides	Tier II SOR Non-Radionuclides
SS464194	0.003	N/A
SS464294	0.054	N/A
SS464594	0.047	N/A
SS464694	0.002	N/A
SS464894	0.000	N/A
SS465194	0.001	N/A
SS465294	0.007	N/A
SS465394	0.004	N/A
SS465794	0.002	N/A
SS465994	0.012	N/A
SS466094	0.018	N/A
SS466294	0.001	N/A
SS466594	0.001	N/A

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Table 9
Sum of Ratios for Subsurface Soils Based on
Pre-Accelerated Action and Accelerated Action Analytical Results

Location	Begin Depth	End Depth	Tier II SOR Radionuclides	Tier II SOR Non-Radionuclides
CE38-002	0.5	2.5	N/A	0.274
CE39-001	0.5	2.5	N/A	0.156
CE39-002	0.5	2.5	N/A	0.000
CE39-003	0.5	2.5	N/A	0.000
CE39-004	0.5	2.5	0.015	0.001
CF38-001	0.5	2.5	N/A	0.208
CF38-003	0.5	2.5	N/A	0.001
CF38-005	0.5	2.5	N/A	0.079
CF38-006	0.5	2.5	N/A	0.191
CF38-007	0.5	2.5	N/A	0.090
CF38-008	0.5	2.5	N/A	0.058
CF38-010	5	5	N/A	0.000
CF38-011	7.33	7.33	N/A	0.086
CF38-014	7.17	7.17	N/A	0.000
CF38-015	3	5	N/A	0.002
CF38-019	6.7	6.7	N/A	0.265
CF38-020	6.7	6.7	N/A	0.010
CF38-021	3	5	N/A	0.037
CF38-024	10.5	12.5	N/A	0.502
CF38-025	5	5	N/A	0.986
CF38-027	4.5	5	N/A	0.242
CF39-001	0.5	2.5	N/A	0.006
CF39-002	0.5	0.75	0.009	0.058
CF39-004	0.5	2.5	N/A	0.157
CF39-005	0.5	1.8	N/A	0.000
CF39-006	0.5	2.5	N/A	0.225
CF39-007	0.5	2.5	N/A	0.190
CF39-008	0.5	2.5	N/A	0.260
CF39-009	0.5	2.5	N/A	0.142
CF39-010	0.5	1.25	N/A	0.048
CF39-011	0.5	2.5	N/A	0.260
CF39-012	0.5	2.5	N/A	0.166
CF39-013	0.5	2.5	N/A	0.409
42992	0	4.8	0.000	N/A
42992	0.75	1	N/A	0.075
42992	4.55	4.8	N/A	0.012
42992	9.45	9.7	N/A	0.615

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Table 10
Waste Summary

Waste Package No.	Container Type	Final Volume (ft3)	Waste Type	Notes	IDC	Media Type
N/A	Bulk	1080.6	NON	Also contains rebar.	N/A	Concrete
N/A	Bulk	953.5	NON	Also contains rebar.	N/A	Concrete
not given	Bulk	540.3	NON	Waste volume is based on one 20 cubic yard truckload. Media consists of debris, including concrete, wire metal and wood.	N/A	Other - see note
0041787	Bulk	540.3	NON	Waste Package Number is bill of lading number. Waste volume is based on one 20 cubic yard truckload. Media consists of debris, including concrete, wire metal and wood.	N/A	Other - see note
00041789	Bulk	540.3	NON	Waste Package Number is bill of lading number. Waste volume is based on one 20 cubic yard truckload. Media consists of debris including, concrete, wire metal and wood.	N/A	Other - see note
00041788	Bulk	540.3	NON	Waste Package Number is bill of lading number. Waste volume is based on one 20 cubic yard truckload. Media consists of debris, including concrete, asphalt, and metal.	N/A	Other - see note
00041790	Bulk	406.1	NON	Waste Package Number is bill of lading number. Waste volume is based on one 15 cubic yard truckload. Media consists of debris, including concrete, asphalt, and metal.	N/A	Other - see note
0004181	Bulk	540.3	NON	Waste Package Number is bill of lading number. Waste volume is based on one 20 cubic yard truckload. Media consists of debris, including concrete, rebar and metal pipe.	N/A	Other - see note
00041805	Bulk	540.3	NON	Waste Package Number is bill of lading number. Waste volume is based on one 20 cubic yard truckload. Media consists of debris, including concrete, rebar and metal pipe.	N/A	Other - see note
N/A	Bulk	1080.6	NON	Waste volume is based on two 20 cubic yard truckloads. Media consists of debris, including concrete, rebar and foam.	N/A	Other - see note
N/A	Bulk	946.4	NON	Waste volume is based on one 15 cubic yard truckload and one 20 cubic yard truckload. Media consists of debris, including concrete, rebar and pipe.	N/A	Other - see note

Table 10
Waste Summary

Waste Package No.	Container Type	Final Volume (ft3)	Waste Type	Notes	IDC	Media Type
N/A	Bulk	1620.9	NON	Waste volume is based on three 20 cubic yard truckloads. Media consists of debris, including concrete, rebar and metal pipe.	N/A	Other - see note
N/A	Bulk	1539.7	NON	Waste volume is based on two 20 cubic yard truckloads and one 17 cubic yard truckload. Media consists of debris, including concrete and asphalt.	N/A	Other - see note
N/A	Bulk	540.3	NON	Waste volume is based on one 20 cubic yard truckload.	N/A	Concrete
N/A	Bulk	406.1	NON	Waste volume is based on one 15 cubic yard truckload.	N/A	Concrete
N/A	Bulk	1080.6	NON	Waste volume is based on two 20 cubic yard truckloads.	N/A	Concrete
	Bulk	1080.6	NON	Waste volume is based on two 20 cubic yard truckloads. Media consists of debris, including concrete, pipe and re-bar.	N/A	Other - see note
N/A	Bulk	540.3	NON	Waste volume is based on one 20 cubic yard truckload.	N/A	Concrete
00041811	Bulk	0.0	NON	Waste Package Number is bill of lading number. Waste volume is based on one 20 cubic yard truckload.	N/A	Concrete
00041831	Bulk	399.1	NON	Waste Package Number is bill of lading number. Waste volume is based on one 15 cubic yard truckload.	N/A	Concrete
00041871	Bulk	540.3	NON	Waste Package Number is bill of lading number. Waste volume is based on one 20 cubic yard truckload. Media consists of debris, including concrete, pipe and re-bar.	N/A	Other - see note
050178	Bulk	540.3	NON	Waste Package Number is bill of lading number. Waste volume is based on one 20 cubic yard truckload. Media consists of debris, including concrete, pipe and re-bar.	N/A	Other - see note
X29666	CAR	1189.0	LLW	This is concrete and process waste pipe.	5001	Other - see note
X29668	CAR	1189.0	LLW	Transite Duct, asbestos contaminated low-level waste.	5001	Other - see note
X29669	CAR	1200.7	LLW		5001	Other - see note

NON - non-radioactive/non-hazardous

LLW - low level radioactive waste

Table 11
Waste Characterization Data Summary – Detected Analytes

Matrix Type	Analyte	Maximum	Number of Samples	Detection Frequency (%)	Units
Sediment from Transite Ducts*	Aluminum	6120	1	100	mg/kg
	Antimony	10.8	1	100	mg/kg
	Arsenic	4.7	1	100	mg/kg
	Barium	451	1	100	mg/kg
	Beryllium	393	1	100	mg/kg
	Cadmium	32.8	1	100	mg/kg
	Chromium	984	1	100	mg/kg
	Cobalt	32.3	1	100	mg/kg
	Copper	196	1	100	mg/kg
	Iron	46700	1	100	mg/kg
	Lead	422	1	100	mg/kg
	Lithium	9.6	1	100	mg/kg
	Manganese	784	1	100	mg/kg
	Mercury	0.6	1	100	mg/kg
	Molybdenum	53	1	100	mg/kg
	Nickel	1820	1	100	mg/kg
	Selenium	9	1	100	mg/kg
	Silver	416	1	100	mg/kg
	Strontium	428	1	100	mg/kg
	Tin	21.3	1	100	mg/kg
	Vanadium	31.7	1	100	mg/kg
	Zinc	1700	1	100	mg/kg
	Am 241	16	1	100	mg/kg
	Plutonium 239/240	19.5	1	100	mg/kg
	Uranium 233/234	1400	1	100	mg/kg
	Uranium 235	244	1	100	mg/kg
	Uranium 238	8520	1	100	mg/kg
Concrete	Aluminum	6860	2	100	mg/kg
	Antimony	0.42	2	100	mg/kg
	Arsenic	4.6	2	100	mg/kg
	Barium	114	2	100	mg/kg
	Beryllium	0.26	2	100	mg/kg
	Cadmium	0.28	2	100	mg/kg
	Chromium	12.6	2	100	mg/kg
	Cobalt	2.8	2	100	mg/kg
	Copper	10.7	2	100	mg/kg
	Iron	8190	2	100	mg/kg
	Lead	4.4	2	100	mg/kg
	Lithium	10.4	2	100	mg/kg
	Manganese	145	2	100	mg/kg
	Molybdenum	2.7	2	100	mg/kg
	Nickel	11.1	2	100	mg/kg

Table 11
Waste Characterization Data Summary – Detected Analytes

Matrix Type	Analyte	Maximum	Number of Samples	Detection Frequency (%)	Units
	Strontium	287	2	100	mg/kg
	Tin	2.6	2	100	mg/kg
	Vanadium	69.7	2	100	mg/kg
	Zinc	34.4	2	100	mg/kg
	Uranium-235	0.217	2	100	pCi/g
	Uranium-238	1.8	2	100	pCi/g
Original Process Waste Line Water	Antimony	40	1	100	ug/l
	Barium	88	1	100	ug/l
	Beryllium	4.5	1	100	ug/l
	Cadmium	0.46	1	100	ug/l
	Chromium	19.5	1	100	ug/l
	Cobalt	7.9	1	100	ug/l
	Copper	31	1	100	ug/l
	Iron	1350	1	100	ug/l
	Lead	5.6	1	100	ug/l
	Lithium	7600	1	100	ug/l
	Manganese	50.5	1	100	ug/l
	Mercury	0.13	1	100	ug/l
	Molybdenum	17500	1	100	ug/l
	Nickel	288	1	100	ug/l
	Selenium	47.5	1	100	ug/l
	Strontium	48.7	1	100	ug/l
	Tin	11.7	1	100	ug/l
	Vanadium	16.4	1	100	ug/l
	Zinc	117	1	100	ug/l
Water From Transite Duct	Aluminum	1080	2	100	ug/l
	Antimony	46.8	2	100	ug/l
	Barium	111	2	100	ug/l
	Beryllium	21.9	2	100	ug/l
	Cadmium	1.7	1	50	ug/l
	Chromium	40	2	100	ug/l
	Cobalt	18.5	2	100	ug/l
	Cobalt	2.7	2	100	ug/l
	Copper	64.1	2	100	ug/l
	Iron	6660	2	100	ug/l
	Lead	34.3	2	100	ug/l
	Lithium	7880	2	100	ug/l
	Manganese	126	2	100	ug/l
	Mercury	0.16	2	100	ug/l
	Molybdenum	18500	2	100	ug/l
	Nickel	279	2	100	ug/l
	Selenium	37.8	2	100	ug/l

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Table 11
Waste Characterization Data Summary – Detected Analytes

Matrix Type	Analyte	Maximum	Number of Samples	Detection Frequency (%)	Units
	Silver	3.2	1	50	ug/l
	Strontium	177	2	100	ug/l
	Tin	13.7	2	100	ug/l
	Vanadium	21.5	2	100	ug/l
	Zinc	1690	2	100	ug/l

*Even though results from the total metal analysis suggest that the sediment could be RCRA characteristic, metal concentrations in sludge from process tanks were less than the RCRA characteristic limits (based on historical analysis using the toxicity characteristic leaching procedure).

spread over the site using broadcast seeding methods. Hydromulch was applied to conserve moisture and prevent erosion.

11.0 NO LONGER REPRESENTATIVE SAMPLING LOCATIONS

Sampling locations that are no longer representative include the four historical locations next to Tank 40 (i.e., 04795, 04895, 04995 and 05095). These locations were impacted when Tank 40 was excavated. No longer representative sampling locations are shown on Figure 10.

12.0 DATA QUALITY ASSESSMENT

The DQA is based on various criteria derived from EPA Guidance, particularly the DQO process and DOE quality requirements. References are listed in Sections 12.9 and 13.

12.1 DQO Decisions

Consistent with the original DQO decision rules of the project, SOR calculations were performed on sample results, by sample and across the AOC (refer to Tables 8 and 9). All SORs were below 1 relative to RFCA Tier I and Tier II ALs, hence no remediation within IA Group 800-6 is required. Several organics (mostly SVOCs) were detected at "significant" levels (>10 times the reportable limit), but SORs were not calculated, because associated ALs are not published in RFCA. Quality control evaluations performed on the IHSS Group 800-6 data are documented within the databases "PlanvsActuals2.mdb" and "IHSS-specificSets.mdb".

12.2 Verification and Validation of Results

Verification ensures that data produced and used by the project are documented and traceable per quality requirements. Validation consists of a technical review of data that directly support the project decisions, such that any limitations of the data relative to project goals are stated. Verification and validation (V&V) criteria include:

- Chain-of-Custody;
- Preservation and hold-times;
- Instrument Calibrations;
- Preparation Blanks;
- Interference Check Samples (metals);
- Matrix Spikes/Matrix Spike Duplicates;
- Laboratory Control Samples;
- Field Duplicate measurements;

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- Chemical yield (radiochemistry);
- Required Quantitation Limits/Minimum Detectable Activities (sensitivity of chemical and radiochemical measurements, respectively); and,
- Sample Analysis and Preparation methods.

Evaluation of V&V criteria ensures that precision, accuracy, representativeness, completeness, comparability, and sensitivity (PARCCS) parameters are satisfactory (i.e., within specified tolerances documented in the laboratory-specific contract scope of work). Satisfactory V&V of laboratory quality controls are indicated by a 10% (or greater) validation frequency of all results by method and matrix-type, and <10% rejection of those records validated.

Validation results are summarized in Table 12. All data are useable except for R and R1 data, which indicate rejection of data. All other data are useable with qualification except for V data, which are useable without qualification.

Hardcopy records of the V&V results and individual (analytical) data packages are filed by RIN and are maintained by Kaiser-Hill Analytical Services Division (ASD); hardcopies will ultimately reside in the Federal Center (Lakewood, CO). Hardcopy records may also be viewed as Adobe® Acrobat (*.pdf) files on the RFETS intranet under the ASD link.

12.3 Precision

Precision of field sampling was adequate based on the repeatability of all (18) real/duplicate sample results to within concentrations below all respective RFCA Tier II ALs. Laboratory precision is addressed in Section 12.2 and Table 12.

12.4 Accuracy (and Bias)

Maps

Distance measurements recorded on maps are within ± 1 ft, based on the global positioning system technology in use (Trimble 4800 Series).

Methylene chloride results in real samples should be concluded as nondetects and should not be used in SOR calculations, as the real results do not exceed 10 times their associated lab blank concentrations [use of the "10-times" rule per Environmental Protection Agency (EPA) data validation guidance; EPA, 1996a].

Laboratory accuracy is addressed in Section 12.2 and Table 12.

12.5 Representativeness

Samples acquired for the project are representative based on the types, number and location of samples acquired relative to the site-specific history. Other criteria that corroborate representativeness include:

- Implementation of industry-standard Chain-of-Custody protocols;

- Compliance with sample preservation and hold times; and
- Compliance with documented and Site-approved sampling plans (IASAP) and procedures, including SW-846 analytical methods (graphical comparisons can be made between the planning maps within the IASAP and SAP-Addenda vs. actual maps published within this report).

Table 12
Group 800-6, Summary of Validated Records in the RFETS Soil-Water Database

Validation Code	Total Of CAS No.s	Rads		Metals			VOCs	SVOCs	Sulfides	pH	Anions
		Gamma Spec	Alpha Spec	SW6010	SW846 Total	SW6200	SW8260	SW8270	SW9030A	SW9040	SW9056/E300
Null	447	96		151	8	60	69	63			
I	892		10	307			246	325		2	2
J	219			205			14				
J1	547		2	509			25	10	1		
U1	5						5				
V	1947	45		330			841	731			
V1	8379		4	1226			4232	2911	2	2	2
JB	7						7				
JB1	2						2				
UJ	237			53			180	4			
UJ1	797			118			592	87			
R	1			1							
R1	1			1							
Total	13481	141	16	2901	8		6213	4131	3	4	4
% Verified/Validated	97%	32%	100%	95%	0%	0%	99%	98%	100%	100%	100%
% of V&V rejected	0.02%	0.00%	0.00%	0.07%	NA	NA	0.00%	0.00%	0.00%	0.00%	0.00%

Key:

V, V1 = valid without qualification

U, U1 = non-detect

J, J1 = estimated (semi-quantitative) value

B, B1 = contaminant also found in associated lab blank

A = acceptable w/ qualification

UJ, UJ1 = non-detect; detection limit is estimated

Null, I, N, Y, Z = not validated

R, R1 = Rejected, do not use

12.6 Completeness

Sampling completeness is evaluated through the number and types of samples acquired relative to the project DQOs. Specifically, were enough samples collected, and valid results produced, to make project decisions?

A summary of the V&V for all Electronic Data Deliverable records indicates that the minimum required percentages of validation, >10%, were achieved for all sample types and methods, with the exception of 5 alpha spec results. However, site-wide, alpha spectroscopy has been validated at a frequency of 58% since April, 2001 (1475 alpha spectroscopy soil records), and of the percentage validated, less than 1% of the records were rejected. Based on inference from site-wide validation results, the 5 alpha spectroscopy records of interest are considered usable.

Use of EPA QA/G-4, log-normal, or non-parametric methods, such as the Sign Test in MARSSIM (EPA et al., 1997), would yield better than a 95% confidence that enough samples were acquired to conclude that each analyte is below its respective RFCA Tier I action level. Assuming log-normality with use of a 95% confidence level and SOR values, the numbers of samples required per Gilbert (1987, Eq. 13.23) are tabulated below.

Table 13
Numbers of Samples Taken Compared with Numbers of Samples Required

Sample Type	Actual No. of Samples	Number of Samples Required (Gilbert 1987)
Surface Soil Rad (0-6" depth)	31	30
Surface Soil NonRad (0-6" depth)	22	18
Subsurface Soil Rad (>6" depth)	26	21
Subsurface Soil NonRad (>6 depth)	27	23

12.7 Comparability

All results presented are comparable with nation-wide Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) data and DOE complex-wide environmental data. This comparability is based on:

- Use of standardized engineering units in the reporting of measurement results;
- Consistent sensitivities of measurements (generally $\leq \frac{1}{2}$ corresponding action levels);
- Use of site-approved procedures (e.g., Contractual Statements of Work for laboratory analyses);
- Systematic quality controls; and
- Thorough documentation of the planning, sampling/analysis process, and data reduction into formats designed for making decisions (traceable to the project's original data quality objectives).

12.8 Sensitivity

Adequate sensitivities, in units of ug/kg for organics, mg/kg for metals, and pCi/g for radionuclides were attained for all analytes, with exceptions noted below. Some records (but not necessarily all records) with the analytes listed below have RLs above their associated RFCA Tier II Als (Table 14). "Adequate" sensitivity is defined as an RL less than the analyte's associated action level (typically $<1/2$ the action level).

Table 14
Analytes with Reporting Limits Greater than RFCA Tier II ALs

CAS No.	Analyte Name
51-28-5	2,4-DINITROPHENOL
121-14-2	2,4-DINITROTOLUENE
606-20-2	2,6-DINITROTOLUENE
91-94-1	3,3'-DICHOROBENZIDINE
111-44-4	BIS(2-CHLOROETHYL) ETHER
10061-01-5	CIS-1,3-DICHLOROPROPENE
621-64-7	N-NITROSO-DI-N-PROPYLAMINE
98-95-3	NITROBENZENE
87-86-5	PENTACHLOROPHENOL
10061-02-6	TRANS-1,3-DICHLOROPROPENE

The following four analytes also had reporting limits greater than RFCA Tier I Als (Table 15).

Table 15
Analytes with Reporting Limits Greater than RFCA Tier I ALs

CAS No.	Analyte Name
121-14-2	2,4-DINITROTOLUENE
606-20-2	2,6-DINITROTOLUENE
111-44-4	BIS(2-CHLOROETHYL) ETHER
621-64-7	N-NITROSO-DI-N-PROPYLAMINE

12.9 K-H V&V Guidelines

General Guidelines for Data Verification and Validation, DA-GR01-v1, December 3, 1997.

V&V Guidelines for Isotopic Determinations by Alpha Spectrometry, DA-RC01-v1, 2/13/98.

V&V Guidelines for Volatile Organics, DA-SS01-v1, 12/3/97.

V&V Guidelines for Semivolatile Organics, DA-SS02-v1, 12/3/97.

EPA 540/R-94/013 (1996b), *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*.

EPA 540/R-94/012 (1996a), *USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review*.

Lockheed-Martin, 1997, *Evaluation of Radiochemical Data Usability*, ES/ER/MS-5.

12.10 Summary

DQOs were attained relative to sampling power (number and types of samples), confidence in decisions (>90%), and the various V&V criteria (especially the PARCCS parameters). Validation of laboratory quality control criteria remains in progress for the gamma spectroscopy results.

13.0 REFERENCES

CDPHE, 2002, Environmental Restoration RFCA Standard Operating Protocol FY02 Notification #02-02 Approval Letter, March.

DOE, 1999a, RFCA Standard Operating Protocol for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, CO.

DOE 1999b, DOE Order 414.1A Order 414.1A, Quality Assurance.

DOE, 2000. *Rocky Flats Cleanup Agreement* (RFCA), Attachment 5, Rocky Flats Environmental Technology Site, Golden, CO, March.

DOE, 2001a, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, CO, June.

DOE 2001b, Industrial Area Sampling and Analysis Plan Addendum #IA-02-01, Rocky Flats Environmental Technology Site, Golden, CO, November.

DOE, 2001c, First Quarter RFCA Groundwater Monitoring Report for Calendar Year 2001, Rocky Flats Environmental Technology Site, Golden, Colorado, August.

DOE, 2001d, Fourth Quarter RFCA Groundwater Monitoring Report for Calendar Year 2000, Rocky Flats Environmental Technology Site, Golden, Colorado, May.

DOE 2002a, Environmental Restoration RFCA Standard Operating Protocol for Routine Soil Remediation, Rocky Flats Environmental Technology Site, Golden, CO. January.

DOE 2002b, Environmental Restoration RFCA Standard Operating Protocol Notification #02-02, Rocky Flats Environmental Technology Site, Golden, CO, February.

DOE, CDPHE, EPA, 2002, Proposed RFCA Modifications, U.S. Department of Energy, Colorado Department of Public Health and Environment, and U.S. Environmental Protection Agency, Rocky Flats Environmental Technology Site, November.

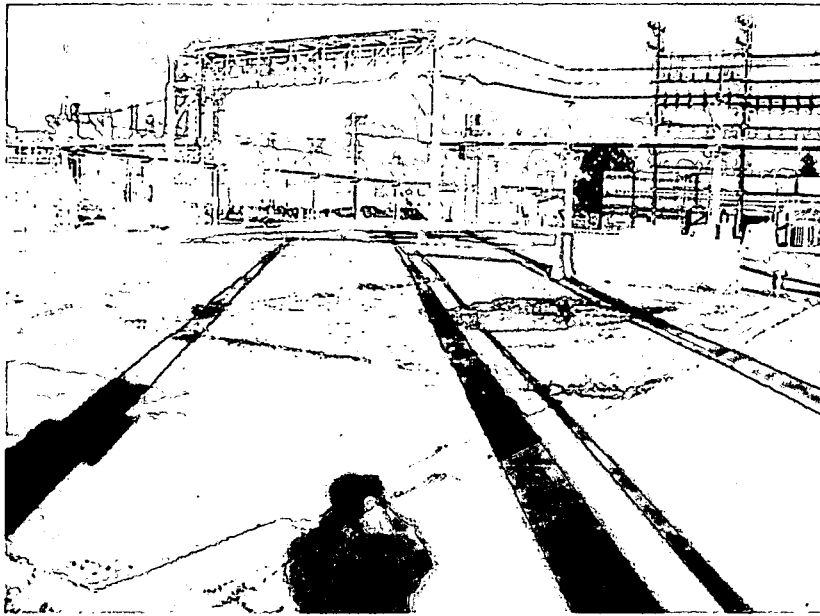
EPA, 1994a, QA/G-4, Guidance for the Data Quality Objective Process.

EPA, 1998, QA/G-9, Guidance for the Data Quality Assessment Process; Practical Methods for Data Analysis U.S. EPA 540/R-94/013, USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review.

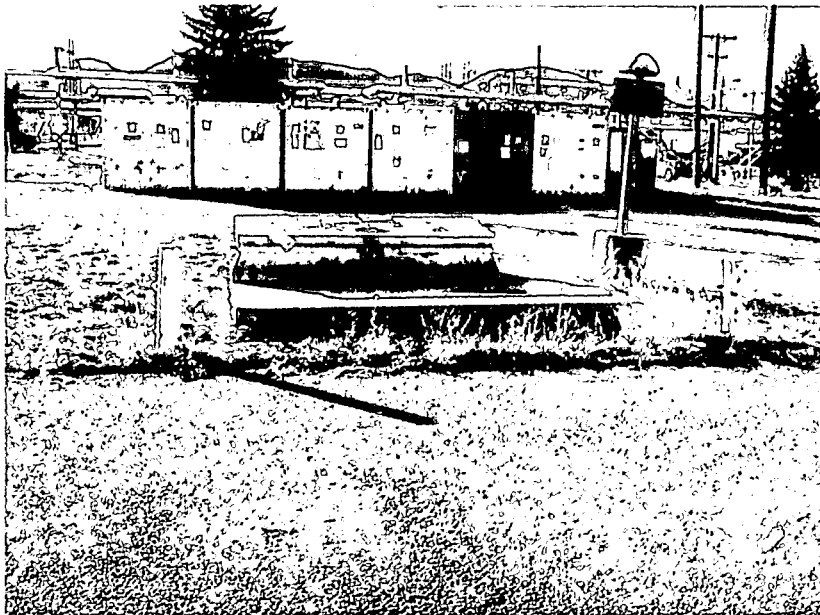
EPA et al, 1997, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), EPA 402-R-97-016, NUREG-1575.

Gilbert, 1987, Statistical Methods for Environmental Pollution Monitoring, published by Van Nostrand Reinhold, New York, New York, 1987.

Appendix A Project Photographs



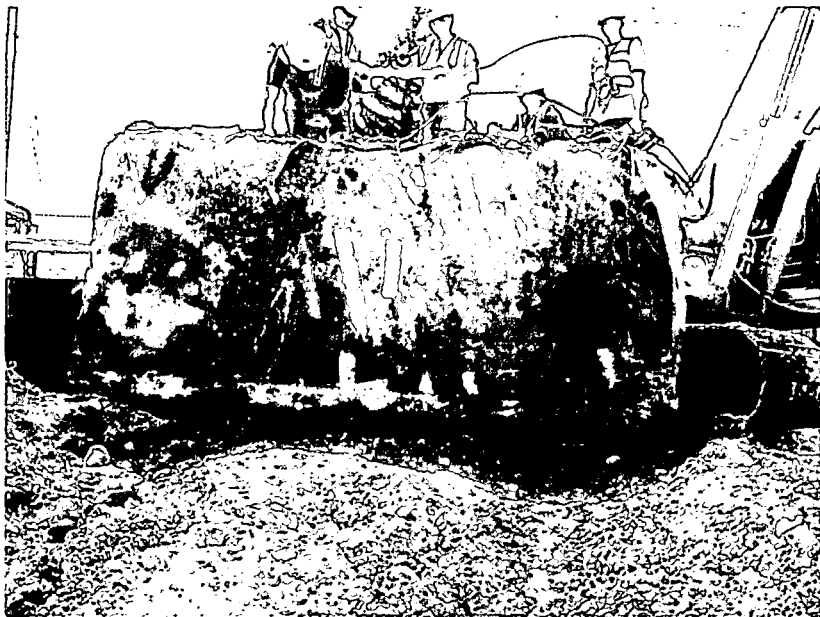
Building 889 Slab Prior to Removal



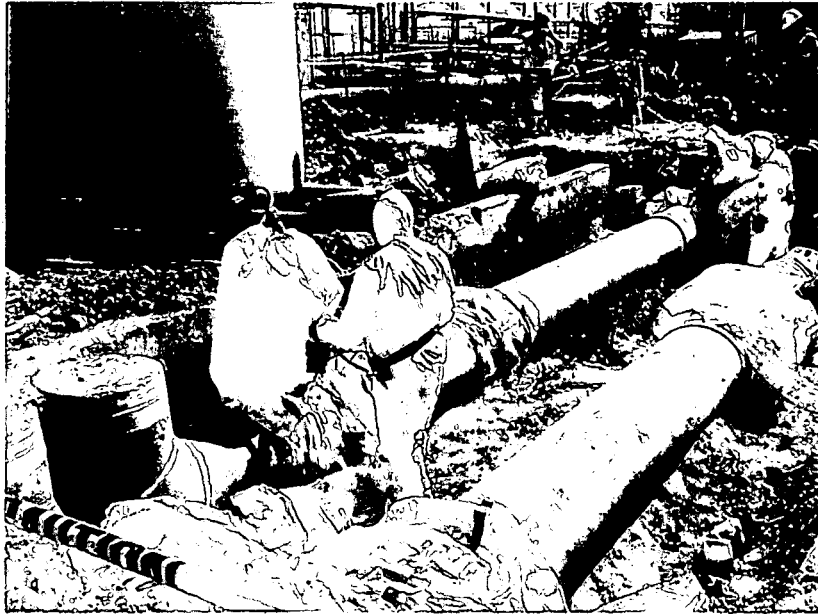
Tank 40 Prior to Removal



Bottom Half Segment of Tank 40 During Removal



Tank 40 Removed



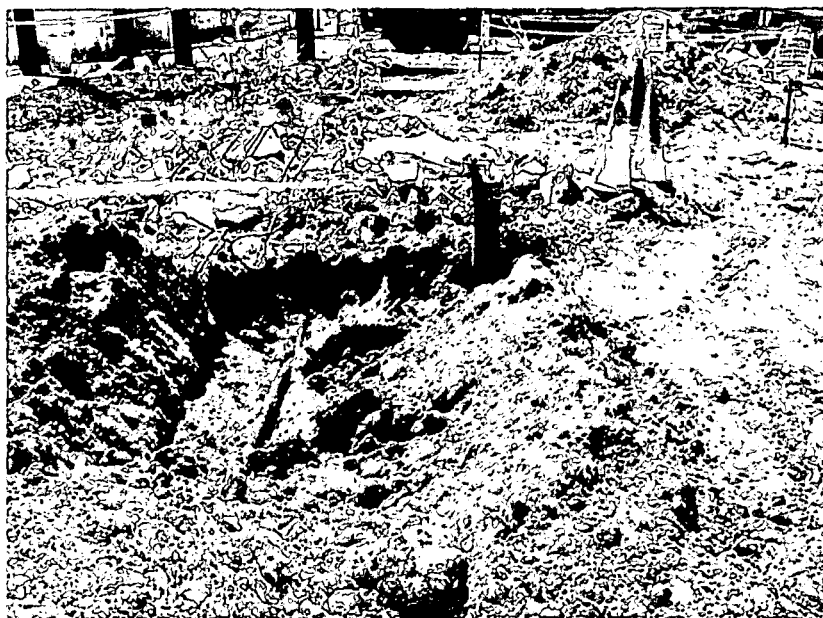
Transite Duct Foaming



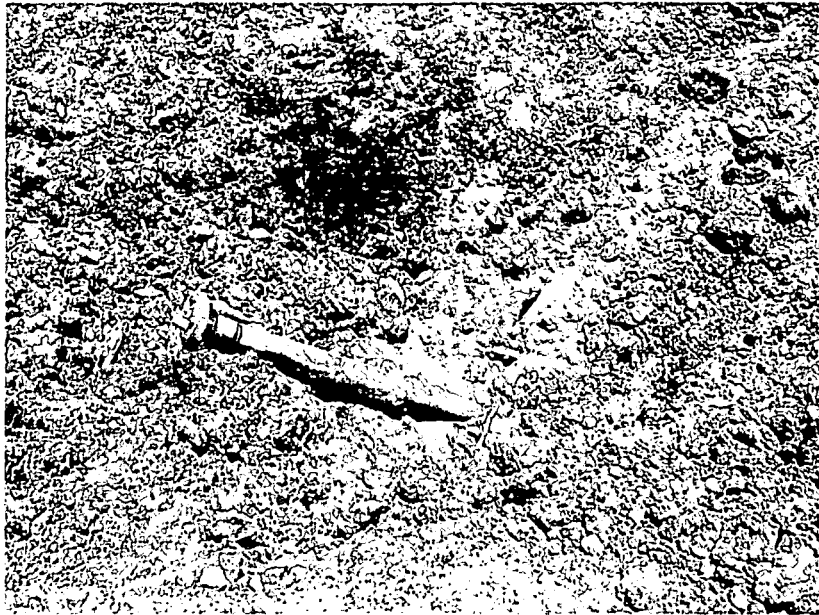
Building 89 East Tank Removed and NPWL Exposed



Close up of Removed East Tank



Close up of NPWL Exposed Segment



NPWL Segment Excavated



Building 889 Janitor's Sink Removed

North and South Tank 28 Exposed



Overview of OPWL and Tank 28 Area





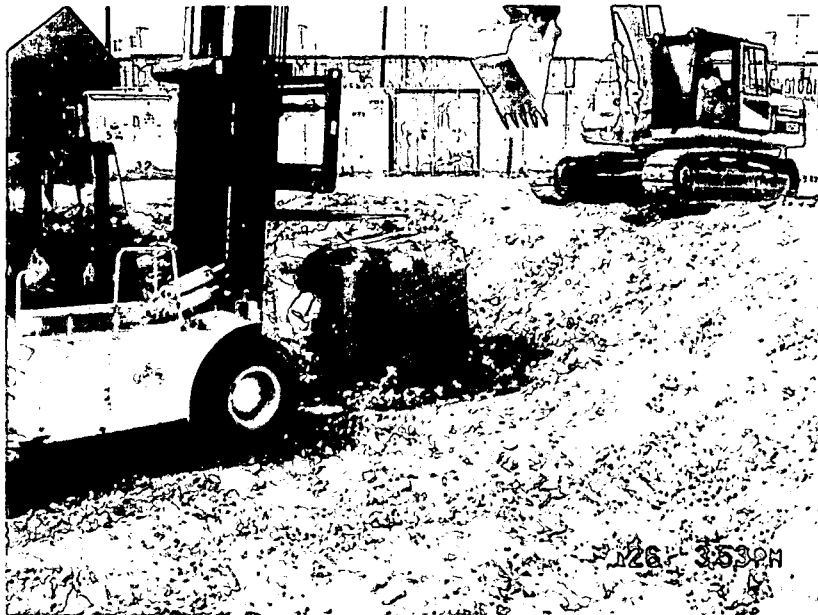
OPWL Exposed Near Tank 28



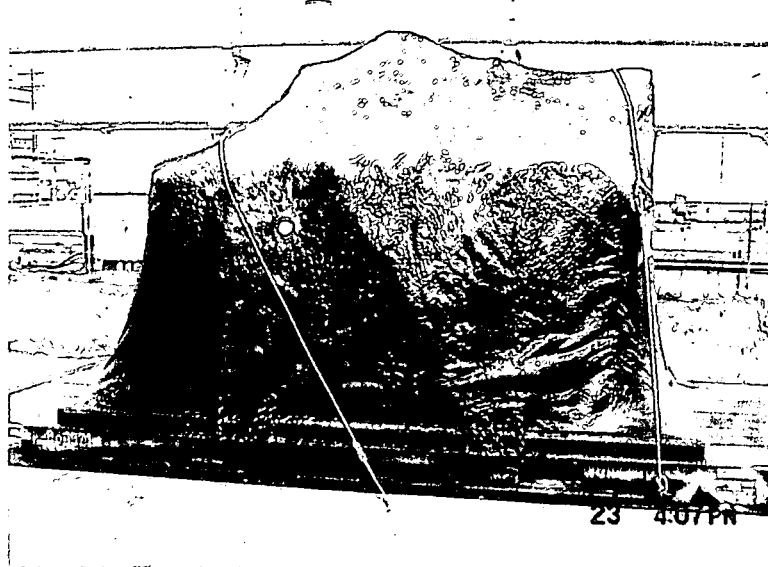
OPWL Exposed



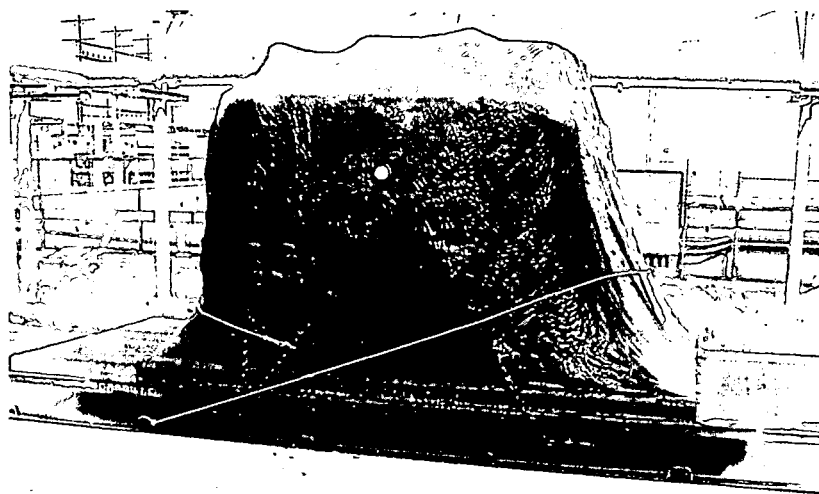
South Tank 28 Removed



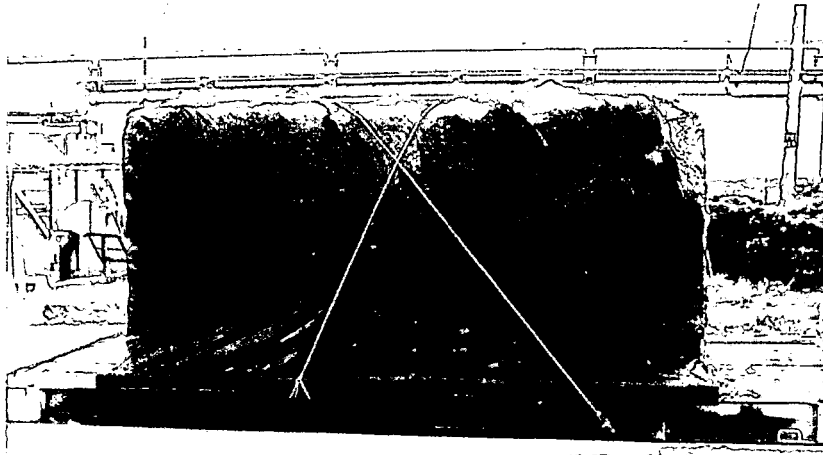
North Tank 28 Ready for Removal



South Tank 28 with Instacote



North Tank 28 with Instacote



23 4:07 PM

Tank 40 with Instacote

Appendix B Correspondence

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE REGULATORY CONTACT RECORD

Date/Time: February 21, 2002

Site Contact(s): Mike Bemski, Susan Serreze, Craig Cowdery
Phone: 303-966-4090, 303-966-2677, 303-966-2506

Regulatory Contact: Elizabeth Pottorff, Carl Spreng, and Dave Kruchek
Phone: 303-692-3429, 303-692-3358, 303-692-3328

Agency: CDPHE

Purpose of Contact: Walk down of Building 889 and Notification #02-02 Discussion

Discussion

A meeting was held with Elizabeth Pottorff, Carl Spreng, and Dave Kruchek (CDPHE) to discuss the potential remediation at B889. Several issues were discussed including the following:

- Characterization sampling intervals would include 0.0 to 2.5 feet and if contamination was found additional intervals would be sampled.
- The potential location of a tank/sump at the eastern portion of the building.
- The location of exhaust sumps.

CDPHE agreed to the sampling strategy. K-H agreed to further evaluate the potential sump location at the eastern portion of the building and add a biased sampling location in this area. The IASAP Addendum #IA-02-01, which had already been approved, was not modified, however, these changes were made in the RADMS sampling plan.

Required Distribution:

C. Spreng, CDPHE
D. Kruchek, CDPHE
E. Pottorff, CDPHE
G. Kleeman, EPA
N. Castaneda, RFFO
L. Brooks, K-H
M. Broussard, K-H
L. Butler, K-H
A. Primrose, K-H

Contact Record 4/24/02
Rev. 0

L. Norland, K-H
S. Nesta, K-H
D. Foss, CH2MH
S. Serreze, Arcadia
C. Cowdery, Washington Group
M. Bemski, SSOC
D. Reeder, Summit
ER Meeting Minutes Book
Administrative Record

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE REGULATORY CONTACT RECORD

Date/Time: April 5, 2002/ 1:00 pm
Site Contact(s): Lane Butler/Annette Primrose
Phone: 5245/4385

Regulatory Contact: Mark Sattelberg
Phone: 5413
Agency: US Fish and Wildlife

Purpose of Contact: Discussion of Topsoil requirements for ER and D&D Projects

Discussion

Mark Sattelberg and Lane Butler walked the B111 and B123 site. Mark Sattelberg then discussed the topsoil requirements in effect at the Site with his restoration person at the Rocky Mountain Arsenal. Based on that discussion, he recommends that the topsoil requirements for building demolition and environmental remediation projects consist of five to six inches of topsoil and mixing it into the underlying backfill with the ripper on a dozer or similar equipment. For larger projects, such as the final site regrade and revegetation, the carbon/nitrogen content of the soils needs to be evaluated.

Based on this and following discussions, the Site will use a nominal 5 inches of topsoil mixed with the underlying fill dirt to an approximate depth of 4 inches for the interim actions. For the final Site revegetation, DOE/KH should develop a revegetation plan that spells out how soils will be amended and what seed mixtures will be planted. The plan should take into account local topography, soil types, vegetation types, and moisture levels. It should be planned out well in advance so that everyone knows what will happen once the response action is done.

Contact Record Prepared By: Annette Primrose

Required Distribution:

R. DiSalvo, RFFO
S. MacLeod, RFFO
J. Legare, RFFO
N. Newell, CDPHE
S. Gunderson, CDPHE
T. Rehder, USEPA
P. Arnold, K-H 371
J. Berardini, K-H MS
C. Deck, K-H
C. Gilbreath, K-H 771
T. Hopkins, K-H 776
S. Nesta, K-H RISS

G. Scott, K-H
D. Shelton, K-H
K. North, K-H ESS
A. Rosenman, K-H ESS
J. Mead, K-H ESS
J. Dischinger, RFCSS
D. Johnson, K-H ESS

Additional Distribution:

L. Brooks
M. Broussard
L. Butler
N. Castaneda
D. Foss
F. Gibbs
R. Nininger
L. Norland
M. Sattelberg
S. Surovchak
Administrative Record
ER Contact Record Book

Contact Record 4/10/00
Rev. 7/13/00

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE REGULATORY CONTACT RECORD

Date/Time: May 14, 2002

Site Contact(s): Mike Bemski
Phone: 303-966-4090

Regulatory Contact: Elizabeth Pottorff, Carl Spreng
Phone: 303-692-3429 303-692-3358

Agency: CDPHE

Purpose of Contact: Approval to backfill of excavations where foundation footers were removed at the 889 Project

Discussion

Foundation footers at the 889 Project extended into the soil to an approximate depth of four feet. These footers are being removed entirely and following surveying by Radiological Operations and approval from Radiological Engineering, the footers are being shipped to the Front Range Landfill as sanitary waste. Additionally, a visual inspection is made of both the concrete and the soil for indications of contamination.

Approval was sought from CDPHE to backfill the excavations associated with the removal of the foundation. Elizabeth Pottorff did a walkdown of the 889 Project and agreed to allow for return of the excavated soil as backfill if the soil passed the evaluation listed above. After the 889 site is sufficiently cleared of equipment and concrete rubble, Geoprobe subsurface sampling will take place, and should any contamination be found, equipment will be onsite to remediate those soils.

Additionally, this approval to use the excavated soil as backfill applies only to the areas at the 889 Project where contamination is unlikely. A separate evaluation will be done on the portion of the subsurface where the sumps, ducts, and pipes are present.

Contact Record Prepared by: Michael Bemski

Required Distribution:

E. Pottorff, CDPHE

C. Spreng, CDPHE

G. Kleeman, EPA

N. Castaneda, RFFO

L. Brooks, K-H

L. Butler, K-H

A. Primrose, K-H

S. Serreze, Arcadia

C. Madore, RMC

L. Norland, K-H

ER Regulatory Contacts Book

Administrative Record

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE REGULATORY CONTACT RECORD

Date/Time: May 21, 2002

Site Contact(s): Mike Bemski
Phone: 303-966-4090

Regulatory Contact: Elizabeth Pottorff, Carl Spreng
Phone: 303-692-3429 303-692-3358

Agency: CDPHE

Purpose of Contact: Approval to backfill at the excavation site of Tank 40 at the 889 Project

Discussion

Tank 40 was a large concrete tank used to store process waste from B-889. The storage compartments at the base of Tank 40 were removed intact and there was no evidence of leakage from the tank. When the tank was removed from the ground, a thin black film floating on the groundwater was noted. Nearly all of the film was collected for sample and analysis showed the fluid to be diesel-like and diesel degradation products. No radiological contamination was found. Following the taking of the sample, no new black film was evident.

A walkdown was held with Elizabeth Pottorff to discuss the occurrence of the black film and the potential backfill of the excavation site of Tank 40.

The issues were discussed including the following:

- What environmental impact did the occurrence of the black film present;
- What options merited consideration for further action, if any.

From the discussion, the following was noted:

Very little of the diesel-like material was present.

Diesel would continue to naturally attenuate.

There were no chlorinated hydrocarbons such as solvents.

No health hazard was present due to whatever diesel remained.

With the above information, the decision was made to proceed with the backfill of the Tank 40 excavation with the same soil that had been removed and that no further remediation would be attempted on the diesel.

Contact Record Prepared by: Michael Bemski

Required Distribution:

E. Pottorff, CDPHE
C. Spreng, CDPHE
G. Kleeman, EPA
N. Castaneda, RFFO
L. Brooks, K-H
L. Butler, K-H
A. Primrose, K-H
S. Serreze, Arcadia
C. Madore, RMC
L. Norland, K-H
ER Regulatory Contacts Book
Administrative Record

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE REGULATORY CONTACT RECORD

Date/Time: May 22, 2002

Site Contact(s): Michael Bemski
Phone: 303-966-4090

Regulatory Contact: Elizabeth Pottorff
Phone: 303-692-3429

Agency: CDPHE

Purpose of Contact: Discussion of uT

Discussion

Figure 15 of the ER RSOP is a flow diagram that illustrates the work planning process for implementing RSOP field activities. As with all flow diagrams in the ER RSOP, Figure 15 is color coded to indicate activities where regulatory agency consultation is expected. An error was made in color coding that resulted in an indication that the agencies would be involved in the Management Readiness Assessment. The activity that should have been highlighted for agency participation is the Pre-Evolution Briefing.

This error was discussed by telephone with Carl Spreng and Gary Kleemen and both agreed that it should be corrected. They also agreed that since there were no text changes, the document could be modified simply by letter from DOE with a copy of the corrected flow diagram. I agreed that we would prepare the corrected diagram for transmittal by DOE.

Contact Record Prepared By: R. Lee Norland

Required Distribution:

L. Butler
N. Castaneda
S. Nesta
L. Norland
S. Surovchak
ER Contact Record Book

Contact Record 4/10/00
Rev. 7/13/00

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE ER REGULATORY CONTACT RECORD

Date/Time: September 11, 2002/ 1345

Site Contact(s): Mike Bemski
Phone: 303-966-4090

Regulatory Contact: Elizabeth Pottorff
Phone: 303-692-3429

Agency: CDPHE

Purpose of Contact: Permission to backfill excavations at the 889 Project

Discussion

On June 27, all excavation of the underground utilities had been completed at the 889 Project. In a discussion between Nick Demos and Elizabeth Pottorff, verbal approval was given by Elizabeth to backfill and compact the excavation. The approval was given "at risk", that is, should analytical results from samples already collected indicate contamination that exceeds action levels, specific remediation would then be required. All analytical results from sampling during the project have now been reviewed and no exceedance was noted.

Contact Record Prepared By: Michael Bemski

Required Distribution:

S. Bell, RFFO
L. Brooks, K-H ESS
L. Butler, K-H RISS
C. Deck, K-H Legal
R. DiSalvo, RFFO
S. Gunderson, CDPHE
J. Legare, RFFO

D. Mayo, K-H RISS
J. Mead, K-H ESS
S. Nesta, K-H RISS
K. North, K-H ESS
T. Rehder, USEPA
D. Shelton, K-H
C. Spreng, CDPHE

Additional Distribution

(choose names as applicable):

M. Broussard, K-H RISS
J. Hindman, CDPHE
G. Kleeman, USEPA
D. Krucke, CDPHE
L. Norland, K-H RISS
A. Primrose, K-H RISS
E. Pottorff, CDPHE
S. Tower, DOE

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE ER REGULATORY CONTACT RECORD

Date/Time: 09/19/02 10:28AM

Site Contact(s): Michael Bemski
Phone: 303-966-4090

Regulatory Contact: David Kruchek
Phone: 303-692-3328

Agency: Colorado Department of Public Health and Environment

Purpose of Contact: Approval for Tank 28 spill soil put back

Discussion

Per our telephone discussion of 09/17/02, we will put back the soil that had been picked-up in association with the spill of water from the two Tanks-28. The location for the put-back will be at the same location where the soil was collected, near the tall stack north of Bldg. 881. As discussed, the results from samples taken of the wet soil from the spill showed contaminants well below levels that would have required remediation.

Contact Record Prepared By: Michael Bemski

Required Distribution:

S. Bell, RFFO
L. Brooks, K-H ESS
L. Butler, K-H RISS
C. Deck, K-H Legal
R. DiSalvo, RFFO
S. Gunderson, CDPHE
J. Legare, RFFO

D. Mayo, K-H RISS
J. Mead, K-H ESS
S. Nesta, K-H RISS
K. North, K-H ESS
T. Rehder, USEPA
D. Shelton, K-H
C. Spreng, CDPHE

Additional Distribution

(choose names as applicable):

M. Broussard, K-H RISS
J. Hindman, CDPHE
G. Kleeman, USEPA
D. Kruchek, CDPHE
L. Norland, K-H RISS
A. Primrose, K-H RISS
E. Pottorff, CDPHE
S. Tower, DOE

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Appendix D
Data Comparison with Proposed Modifications to
RCFA Action Levels

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Location	Analyte	Media	Results	Units	Background	Detection Limit	WRW AL
SS462294	Plutonium-239/240	Surface Soil	0.082	pci/g	0.066	0.003	50/116
SS462394	Plutonium-239/240	Surface Soil	0.12	pci/g	0.066	0.005	50/116
SS462494	Plutonium-239/240	Surface Soil	0.11	pci/g	0.066	0.003	50/116
SS462594	Plutonium-239/240	Surface Soil	0.13	pci/g	0.066	0.003	50/116
SS462694	Plutonium-239/240	Surface Soil	0.069	pci/g	0.066	0.005	50/116
SS462794	Plutonium-239/240	Surface Soil	0.12	pci/g	0.066	0.003	50/116
SS462894	Plutonium-239/240	Surface Soil	0.12	pci/g	0.066	0.006	50/116
SS463094	Plutonium-239/240	Surface Soil	0.098	pci/g	0.066	0.007	50/116
SS463194	Plutonium-239/240	Surface Soil	0.1	pci/g	0.066	0.01	50/116
SS463694	Plutonium-239/240	Surface Soil	0.17	pci/g	0.066	0.005	50/116
SS463794	Plutonium-239/240	Surface Soil	0.4	pci/g	0.066	0.004	50/116
SS463894	Plutonium-239/240	Surface Soil	0.32	pci/g	0.066	0.007	50/116
SS464194	Plutonium-239/240	Surface Soil	0.31	pci/g	0.066	0.005	50/116
SS464294	Plutonium-239/240	Surface Soil	1.1	pci/g	0.066	0.005	50/116
SS464594	Plutonium-239/240	Surface Soil	0.22	pci/g	0.066	0.009	50/116
SS464694	Plutonium-239/240	Surface Soil	0.12	pci/g	0.066	0.006	50/116
SS464894	Plutonium-239/240	Surface Soil	0.067	pci/g	0.066	0.01	50/116
SS465194	Plutonium-239/240	Surface Soil	0.089	pci/g	0.066	0.004	50/116
SS465194	Plutonium-239/240	Surface Soil	0.089	pci/g	0.066	0.01	50/116
SS465294	Plutonium-239/240	Surface Soil	0.75	pci/g	0.066	0.006	50/116
SS465394	Plutonium-239/240	Surface Soil	0.4	pci/g	0.066	0.004	50/116
SS465794	Plutonium-239/240	Surface Soil	0.17	pci/g	0.066	0.01	50/116
SS465994	Plutonium-239/240	Surface Soil	1.4	pci/g	0.066	0.004	50/116
SS466094	Plutonium-239/240	Surface Soil	2.2	pci/g	0.066	0.006	50/116
SS466294	Plutonium-239/240	Surface Soil	0.13	pci/g	0.066	0.009	50/116
SS466594	Plutonium-239/240	Surface Soil	0.13	pci/g	0.066	0.005	50/116
SS463394	Uranium-235	Surface Soil	0.18	pci/g	0.0939	0.07	8
SS463494	Uranium-235	Surface Soil	0.14	pci/g	0.0939	0.07	8
SS463794	Uranium-235	Surface Soil	0.21	pci/g	0.0939	0.07	8
SS463894	Uranium-235	Surface Soil	0.4	pci/g	0.0939	0.03	8
SS464294	Uranium-235	Surface Soil	0.18	pci/g	0.0939	0.07	8
SS464594	Uranium-235	Surface Soil	0.12	pci/g	0.0939	0.03	8
SS464594	Uranium-235	Surface Soil	0.16	pci/g	0.0939	0.03	8
SS463394	Uranium-238	Surface Soil	4.7	pci/g	2	0.07	351

Location	Analyte	Media	Results	Units	Background	Detection Limit	WRW AL
SS463494	Uranium-238	Surface Soil	5.1	pci/g	2	0.07	351
SS463794	Uranium-238	Surface Soil	11	pci/g	2	0.08	351
SS463894	Uranium-238	Surface Soil	14	pci/g	2	0.06	351
SS464294	Uranium-238	Surface Soil	3.6	pci/g	2	0.07	351
SS464594	Uranium-238	Surface Soil	3.2	pci/g	2	0.04	351
CF38-025	Methylene Chloride	Subsurface Soil	5.7	ug/kg	NA	0.88	2530000
CF38-024	Benzo(a)anthracene	Subsurface Soil	50	ug/kg	NA	46	34900
CF38-024	Carbon Disulfide	Subsurface Soil	780	ug/kg	NA	1.3	15100000
CF38-024	Ethylbenzene	Subsurface Soil	1200	ug/kg	NA	930	4250000
CF38-024	Naphthalene	Subsurface Soil	6300	ug/kg	NA	59	3090000
CF38-024	Naphthalene	Subsurface Soil	12000	ug/kg	NA	59	3090000
CF38-024	Pyrene	Subsurface Soil	57	ug/kg	NA	45	22100000
CF38-024	Total Xylenes	Subsurface Soil	7900	ug/kg	NA	36	1000000000
CF38-021	Acetone	Subsurface Soil	13	ug/kg	NA	5.2	102000000
CF38-021	Tetrachloroethene	Subsurface Soil	1.1	ug/kg	NA	1.1	615000
CF38-020	Naphthalene	Subsurface Soil	530	ug/kg	NA	59	3090000
CF38-020	Phenol	Subsurface Soil	160	ug/kg	NA	90	613000000
CF38-020	Total Xylenes	Subsurface Soil	82	ug/kg	NA	36	1000000000
CF38-019	1,2-Dichloropropane	Subsurface Soil	2.2	ug/kg	NA	1.7	345000
CF38-019	Acetone	Subsurface Soil	820	ug/kg	NA	6.4	102000000
CF38-019	Carbon Disulfide	Subsurface Soil	3.4	ug/kg	NA	1.3	15100000
CF38-019	Tetrachloroethene	Subsurface Soil	2.1	ug/kg	NA	1.4	615000
CF38-015	Acetone	Subsurface Soil	5.2	ug/kg	NA	4.9	102000000
CF38-015	Copper	Subsurface Soil	48.4	mg/kg	38.21	0.16	40900
CF38-014	Acetone	Subsurface Soil	5.7	ug/kg	NA	5.5	102000000
CF38-014	Strontium	Subsurface Soil	268	mg/kg	48.94	400	613000
CF39-013	Benzo(a)anthracene	Subsurface Soil	72	ug/kg	NA	46	34900
CF39-013	Chrysene	Subsurface Soil	98	ug/kg	NA	62	3490000
CF39-013	Fluoranthene	Subsurface Soil	200	ug/kg	NA	99	27200000
CF39-013	Pyrene	Subsurface Soil	230	ug/kg	NA	47	22100000
CF39-013	Strontium	Subsurface Soil	214	mg/kg	48.94	400	613000
CF39-013	Strontium	Surface Soil	79.3	mg/kg	48.94	400	613000
CF39-012	Methylene Chloride	Subsurface Soil	0.96	ug/kg	NA	0.8	2530000
CF38-011	Acetone	Subsurface Soil	30	ug/kg	NA	5.6	102000000

Location	Analyte	Media	Results	Units	Background	Detection Limit	WRW AL
CF39-011	Pyrene	Subsurface Soil	92	ug/kg	NA	46	22100000
CF38-011	Strontium	Subsurface Soil	224	mg/kg	48.94	400	613000
CF38-011	Tetrachloroethene	Subsurface Soil	2.7	ug/kg	NA	1.2	615000
CF38-010	Acetone	Subsurface Soil	16	ug/kg	NA	4.7	102000000
CF39-010	Aluminum	Surface Soil	18000	mg/kg	16902	12	228000000
CF39-010	Aluminum	Surface Soil	18000	mg/kg	16902	2.4	228000
CF39-010	Aluminum	Surface Soil	18000	mg/kg	16902	12	228000
CF39-010	Antimony	Surface Soil	0.64	mg/kg		0.51	409
CF39-010	Chromium	Surface Soil	20	mg/kg	16.99	0.58	268
CF39-010	Chromium	Surface Soil	20	mg/kg	16.99	0.084	268
CF39-010	Chromium	Surface Soil	20	mg/kg	16.99	0.58	268
CF39-010	Cobalt	Surface Soil	12	mg/kg	10.91	1.2	1550
CF39-010	Cobalt	Surface Soil	12	mg/kg	10.91	0.084	1550
CF39-010	Cobalt	Surface Soil	12	mg/kg	10.91	1.2	1550
CF39-010	Copper	Surface Soil	30	mg/kg	18.06	2.3	40900
CF39-010	Copper	Surface Soil	30	mg/kg	18.06	0.22	40900
CF39-010	Copper	Surface Soil	30	mg/kg	18.06	2.3	40900
CF39-010	Lithium	Surface Soil	14	mg/kg	11.55	5.8	20400
CF39-010	Lithium	Surface Soil	14	mg/kg	11.55	0.13	20400
CF39-010	Lithium	Surface Soil	14	mg/kg	11.55	5.8	20400
CF39-010	Tin	Surface Soil	4	mg/kg		0.36	613000
CF39-009	Methylene Chloride	Subsurface Soil	0.82	ug/kg	NA	0.8	2530000
CF39-009	Strontium	Surface Soil	86.6	mg/kg	48.94	400	613000
CF38-008	Acetone	Subsurface Soil	110	ug/kg	NA	5.5	102000000
CF38-008	Barium	Surface Soil	194	mg/kg	141.26	0.041	26400
CF38-008	Benzo(a)anthracene	Subsurface Soil	77	ug/kg	NA	44	34900
CF38-008	Chromium	Subsurface Soil	88.1	mg/kg	68.27	0.059	268
CF38-008	Chrysene	Subsurface Soil	93	ug/kg	NA	60	3490000
CF38-008	Fluoranthene	Subsurface Soil	160	ug/kg	NA	95	27200000
CF38-008	Manganese	Surface Soil	803	mg/kg	365.08	0.035	3480
CF38-008	Mercury	Subsurface Soil	4.9	mg/kg	1.52	0.014	25200
CF38-008	Nickel	Surface Soil	23.8	mg/kg	14.91	0.68	20400
CF38-008	Pyrene	Subsurface Soil	160	ug/kg	NA	45	22100000

Location	Analyte	Media	Results	Units	Background	Detection Limit	WRW AL
CF38-008	Strontium	Surface Soil	75.2	mg/kg	48.94	400	613000
CF38-008	Zinc	Surface Soil	391	mg/kg	73.76	0.22	307000
CF39-008	Zinc	Surface Soil	91.4	mg/kg	73.76	0.22	307000
CF38-007	Acetone	Subsurface Soil	5.5	ug/kg	NA	4.9	102000000
CF39-007	Acetone	Subsurface Soil	5.5	ug/kg	NA	4.6	102000000
CF38-007	Copper	Subsurface Soil	69.2	mg/kg	38.21	0.16	40900
CF38-007	Copper	Surface Soil	39.6	mg/kg	18.06	0.16	40900
CF38-007	Iron	Surface Soil	22800	mg/kg	18037	1.5	307000
CF38-007	Manganese	Surface Soil	418	mg/kg	365.08	0.035	3480
CF39-007	Methylene Chloride	Subsurface Soil	1.1	ug/kg	NA	0.8	2530000
CF38-007	Nickel	Surface Soil	18.6	mg/kg	14.91	0.69	20400
CF38-007	Strontium	Surface Soil	106	mg/kg	48.94	400	613000
CF39-007	Strontium	Surface Soil	66.9	mg/kg	48.94	400	613000
CF38-007	Tetrachloroethene	Subsurface Soil	2.6	ug/kg	NA	1.1	615000
CF38-007	Vanadium	Subsurface Soil	90.8	mg/kg	88.49	0.25	7150
CF38-007	Vanadium	Surface Soil	60.7	mg/kg	45.59	0.26	7150
CF38-006	Cobalt	Surface Soil	11.4	mg/kg	10.91	0.082	1550
CF38-006	Copper	Subsurface Soil	65.8	mg/kg	38.21	0.16	40900
CF38-006	Copper	Surface Soil	73	mg/kg	18.06	0.16	40900
CF38-006	Iron	Surface Soil	31300	mg/kg	18037	1.5	307000
CF38-006	Manganese	Surface Soil	556	mg/kg	365.08	0.034	3480
CF38-006	Methylene Chloride	Subsurface Soil	1.1	ug/kg	NA	0.87	2530000
CF38-006	Nickel	Surface Soil	24.6	mg/kg	14.91	0.67	20400
CF39-006	Pyrene	Subsurface Soil	64	ug/kg	NA	43	22100000
CF38-006	Strontium	Surface Soil	131	mg/kg	48.94	400	613000
CF39-006	Strontium	Surface Soil	64.8	mg/kg	48.94	400	613000
CF38-006	Vanadium	Surface Soil	76.9	mg/kg	45.59	0.26	7150
CF39-006	Vanadium	Surface Soil	53.8	mg/kg	45.59	0.27	7150
CF38-005	Benzo(a)anthracene	Subsurface Soil	63	ug/kg	NA	41	34900
CF38-005	Chrysene	Subsurface Soil	67	ug/kg	NA	56	3490000
CF38-005	Copper	Subsurface Soil	56.6	mg/kg	38.21	0.16	40900
CF38-005	Copper	Surface Soil	52.3	mg/kg	18.06	0.17	40900
CF38-005	Fluoranthene	Subsurface Soil	160	ug/kg	NA	88	27200000
CF38-005	Iron	Surface Soil	23400	mg/kg	18037	1.6	307000

Location	Analyte	Media	Results	Units	Background	Detection Limit	WRW AL
CF38-005	Manganese	Surface Soil	489	mg/kg	365.08	0.037	3480
CF38-005	Nickel	Surface Soil	18.1	mg/kg	14.91	0.72	20400
CF38-005	Pyrene	Subsurface Soil	150	ug/kg	NA	42	22100000
CF38-005	Strontium	Surface Soil	115	mg/kg	48.94	400	613000
CF38-005	Tetrachloroethene	Subsurface Soil	1.2	ug/kg	NA	1.1	615000
CF38-005	Vanadium	Surface Soil	66.8	mg/kg	45.59	0.27	7150
CF39-005	Xylenes, Total	Subsurface Soil	14.55005	ug/kg		13	1E+09
CF39-005	Xylenes, Total	Surface Soil	14.55	ug/kg	NA	13	1000000000
CF39-004	Acetone	Subsurface Soil	9.3	ug/kg	NA	4.6	102000000
CE39-004	Lithium	Surface Soil	14	mg/kg	11.55	6.4	20400
CE39-004	Lithium	Surface Soil	14	mg/kg	11.55	0.14	20400
CE39-004	Lithium	Surface Soil	14	mg/kg	11.55	6.4	20400
CF39-004	Methylene Chloride	Subsurface Soil	0.91	ug/kg	NA	0.8	2530000
CE39-004	Strontium	Surface Soil	140	mg/kg	48.94	1.3	613000
CE39-004	Strontium	Surface Soil	140	mg/kg	48.94	0.064	613000
CE39-004	Strontium	Surface Soil	140	mg/kg	48.94	1.3	613000
CE39-004	Tin	Surface Soil	2.9	mg/kg		0.4	613000
CE39-004	U-235	Subsurface Soil	0.35	pci/g-dry	0.12	1	8
CE39-004	U-235	Surface Soil	0.35	pCi/g-	0.12	1	8
CF39-003	Barium	Surface Soil	147	mg/kg	141.26	0.043	26400
CF39-003	Chromium	Subsurface Soil	91.8	mg/kg	68.27	0.059	268
CF38-003	Pyrene	Subsurface Soil	74	ug/kg	NA	43	22100000
CE39-003	Strontium	Surface Soil	95.4	mg/kg	48.94	400	613000
CF38-003	Strontium	Surface Soil	75.2	mg/kg	48.94	400	613000
CF39-003	Strontium	Surface Soil	78	mg/kg	48.94	400	613000
CE39-002	Acetone	Subsurface Soil	5.2	ug/kg	NA	5	102000000
CE39-002	Aluminum	Surface Soil	22100	mg/kg	16902	1.4	228000000
CF39-002	Aluminum	Surface Soil	23000	mg/kg	16902	11	228000000
CF39-002	Aluminum	Surface Soil	23000	mg/kg	16902	2.4	228000
CF39-002	Aluminum	Surface Soil	23000	mg/kg	16902	11	228000
CE39-002	Barium	Surface Soil	208	mg/kg	141.26	0.043	26400
CF39-002	Chromium	Surface Soil	19	mg/kg	16.99	0.57	268
CF39-002	Chromium	Surface Soil	19	mg/kg	16.99	0.082	268

Location	Analyte	Media	Results	Units	Background	Detection Limit	WRW AL
CF39-002	Chromium	Surface Soil	19	mg/kg	16.99	0.57	268
CF39-002	Cobalt	Surface Soil	15	mg/kg	10.91	1.1	1550
CF39-002	Cobalt	Surface Soil	15	mg/kg	10.91	0.082	1550
CF39-002	Cobalt	Surface Soil	15	mg/kg	10.91	1.1	1550
CF39-002	Copper	Surface Soil	35	mg/kg	18.06	2.3	40900
CF39-002	Copper	Surface Soil	35	mg/kg	18.06	0.22	40900
CF39-002	Copper	Surface Soil	35	mg/kg	18.06	2.3	40900
CF39-002	Lithium	Surface Soil	18	mg/kg	11.55	5.7	20400
CF39-002	Lithium	Surface Soil	18	mg/kg	11.55	0.13	20400
CF39-002	Lithium	Surface Soil	18	mg/kg	11.55	5.7	20400
CE38-002	Methylene Chloride	Subsurface Soil	1.4	ug/kg	NA	0.8	2530000
CE39-002	Nickel	Surface Soil	21.3	mg/kg	14.91	0.72	20400
CF39-002	Nickel	Surface Soil	19	mg/kg	14.91	4.6	20400
CF39-002	Nickel	Surface Soil	19	mg/kg	14.91	0.21	20400
CF39-002	Nickel	Surface Soil	19	mg/kg	14.91	4.6	20400
CF39-002	Silver	Surface Soil	0.12	mg/kg		0.072	5110
CE39-002	Strontium	Surface Soil	84.4	mg/kg	48.94	400	613000
CF38-002	Strontium	Surface Soil	71.8	mg/kg	48.94	400	613000
CE38-002	Tetrachloroethene	Subsurface Soil	1	ug/kg	NA	0.99	615000
CF39-002	Tin	Surface Soil	5	mg/kg		0.35	613000
CF39-002	U-235	Subsurface Soil	0.22	pci/g-dry	0.12	1	8
CF39-002	U-235	Surface Soil	0.22	pCi/g	0.12	1	8
CE39-002	Vanadium	Surface Soil	49.4	mg/kg	45.59	0.27	7150
CF39-002	Xylenes, Total	Subsurface Soil	25.6847	ug/kg		12	1E+09
CF39-002	Xylenes, Total	Surface Soil	25.68	ug/kg	NA	12	1000000000
CE39-001	Aluminum	Surface Soil	17500	mg/kg	16902	1.4	228000000
CF39-001	Barium	Subsurface Soil	800	mg/kg	289.38	0.042	26400
CF39-001	Barium	Surface Soil	166	mg/kg	141.26	0.043	26400
CE39-001	Methylene Chloride	Subsurface Soil	0.9	ug/kg	NA	0.82	2530000
CE38-001	Strontium	Surface Soil	55.1	mg/kg	48.94	400	613000
CE39-001	Strontium	Surface Soil	89	mg/kg	48.94	400	613000
CE39-001	Strontium	Surface Soil	90	mg/kg	48.94	400	613000
CF39-001	Strontium	Surface Soil	94.6	mg/kg	48.94	400	613000

Location	Analyte	Media	Results	Units	Background	Detection Limit	WRW AL
42992	Copper	Surface Soil	20.7	mg/kg	18.06	5	40900
42992	Plutonium-239/240	Surface Soil	0.025	pci/g	0.02	0.01	50/116
42992	Strontium	Surface Soil	135	mg/kg	48.94	400	613000
42992	Toluene	Subsurface Soil	210	ug/kg	NA	5	31300000
42992	Toluene	Subsurface Soil	83	ug/kg	NA	5	31300000
42992	Toluene	Subsurface Soil	140	ug/kg	NA	5	31300000

WRW AL – Wildlife Refuge Worker Action Levels

Figure 1
IA Group 800-6 Location Map

EXPLANATION

IHSS Groupings

□ 800-6

Standard Map Features

- Buildings and other structures
- ▨ Demolished buildings
- ▨ Solar Evaporation Ponds (SEPs)
- ▨ Lakes and ponds
- Streams, ditches, or other drainage features
- Fences and other barriers
- Paved roads
- Dirt roads
- N Industrial Area Operable Unit Boundary

DATA SOURCE BASE FEATURES:

PAOs
Historical Release Report (HRR)
2nd Annual Update
Sept. 30, 1997
Individual Hazardous Substance Sites (IHSS)
DOE, 1992, HRR Report and Subsequent Updates.
Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data
captured by EGIS/RSI, Las Vegas.
Digitized from the orthophotographs, 1/95



Scale = 1 : 6330
1 inch represents approximately 528 feet



State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

DynCorp
THE ART OF TECHNOLOGY

Prepared for:









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CORP.

September 23, 2002

NT_Srv w:\projects\hy2002\02-0473\ia-800-6.aml

Figure 2
IHSS Group 800-6
(800-164.3, UBC 889, and
OPWL Tanks 28 and 40)

KEY

-  FY 2002 IHSS location
-  FY 2002 PAC location
-  FY 2002 UBC location
-  Other IHSSs
-  Building/structure
-  Paved area
-  Dirt road
-  Stream, ditch, or other drainage feature



Scale = 1:350
20 0 20 Feet

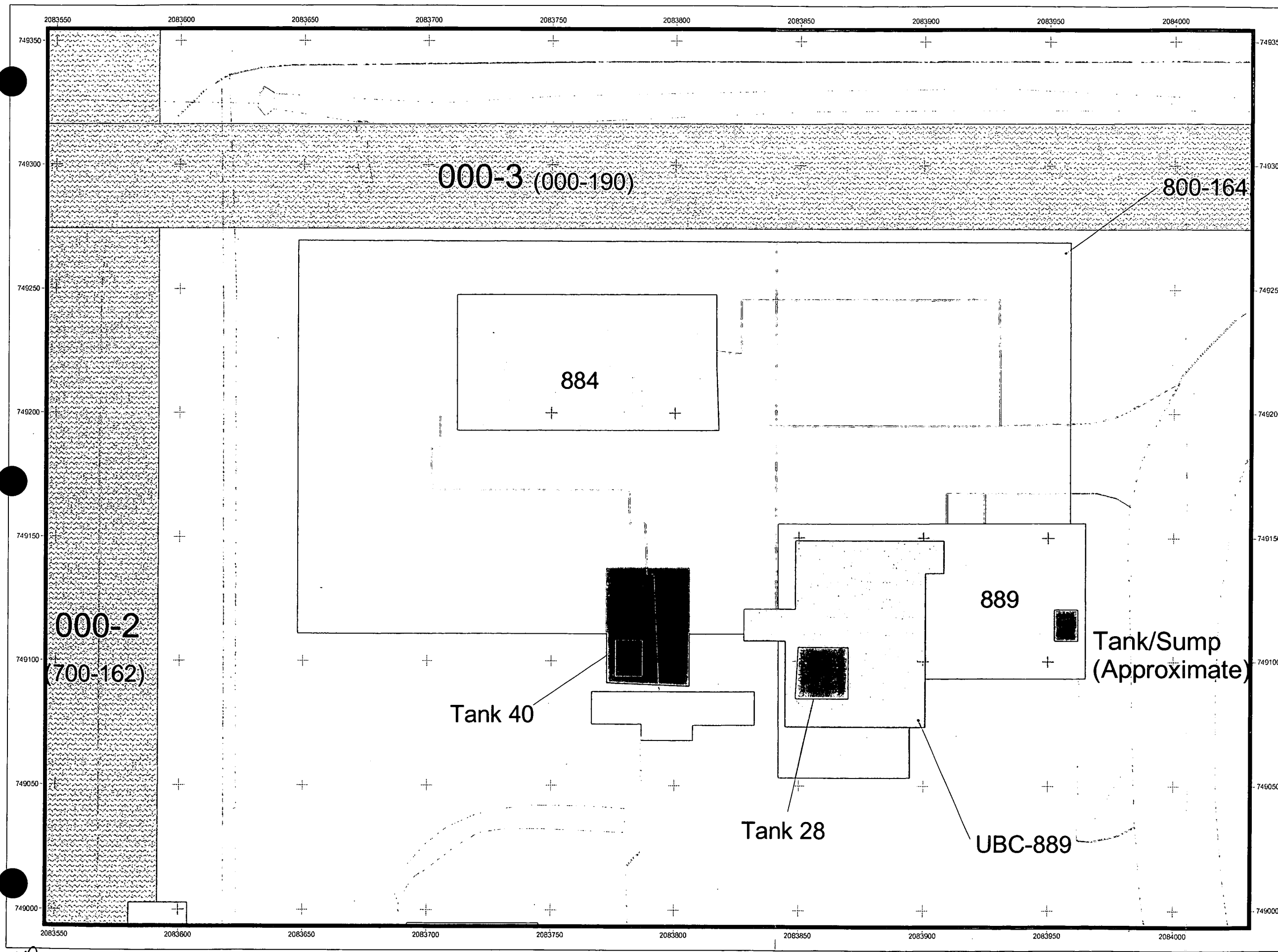
State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

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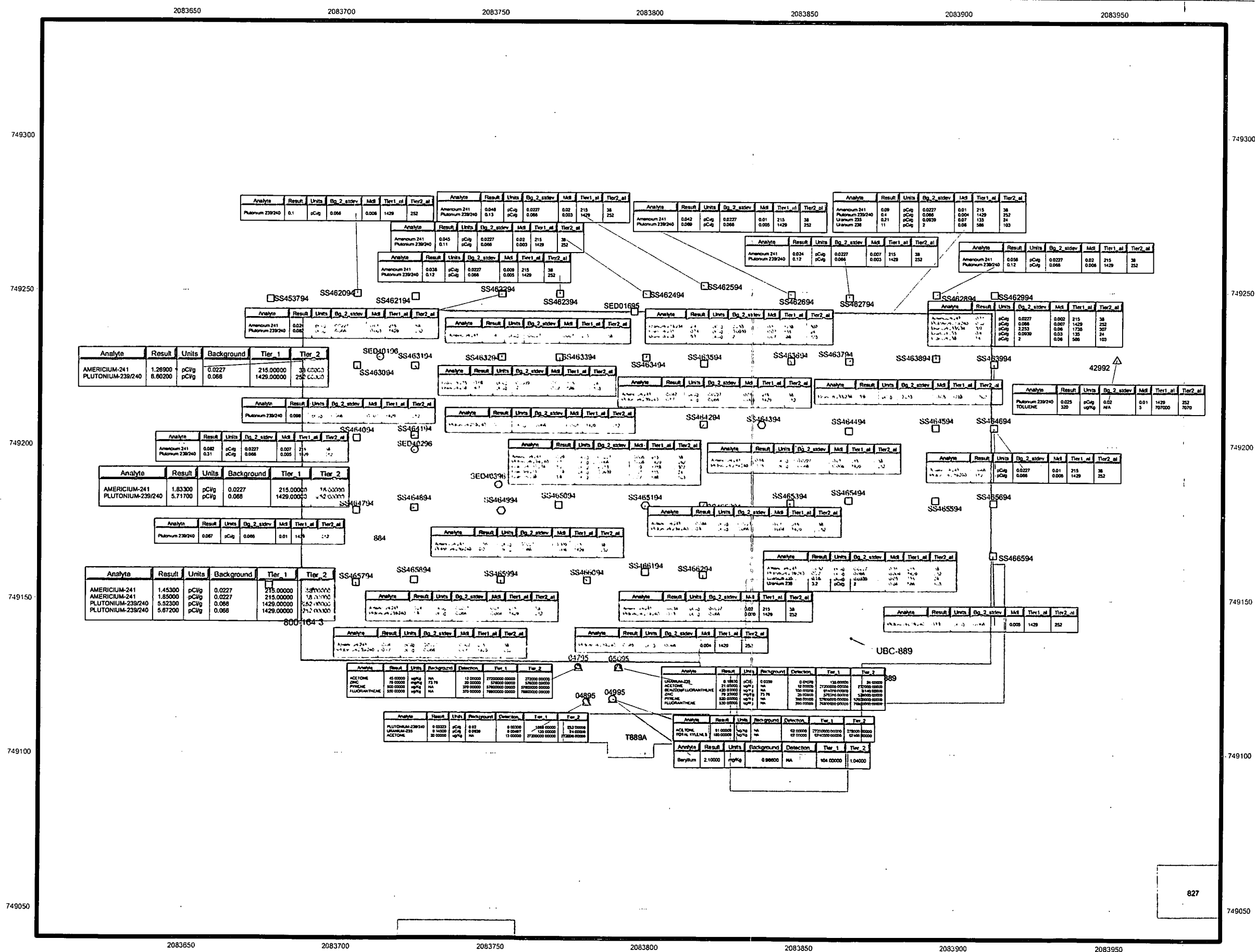


Figure 4
Location of Existing Sample Results Above Detection Limits or Background Levels for IA Group 800-6 (800-164.3, UBC 889, and OPWL Tanks 28 and 40)

KEY

- FY 2002 IHSS location
- FY 2002 PAC location
- FY 2002 UBC location
- Building/structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature

Existing soil sampling locations

- Both subsurface and surface soil
- Subsurface soil
- Surface soil
- Sediment



Scale = 1:400

20 0 20 40 Feet

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Colorado Central Zone
Datum: NAD 27

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889closeoutexisting.apr

September 2002

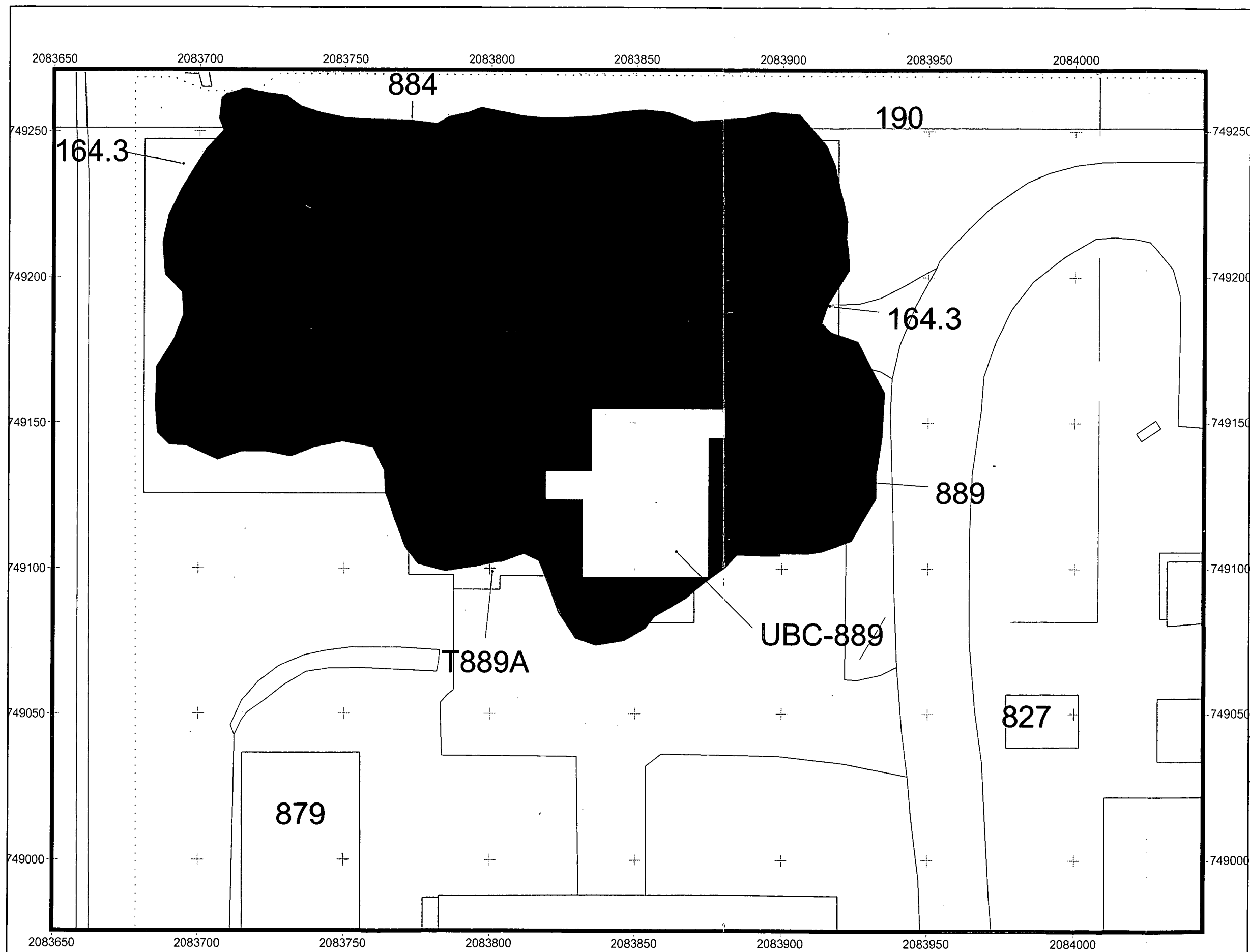


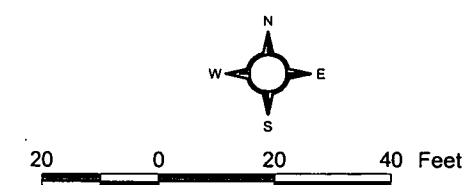
Figure 5
IHSS Group 800-6
Area of Concern

KEY

- Area of Concern
- FY 2002 IHSS location
- FY 2002 PAC location
- FY 2002 UBC location
- Building/structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature

The area of concern is the area with any contaminant concentration greater than background mean plus two standard deviations or reporting limit.

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Scale = 1:400

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Datum: NAD 27

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File:800-6 AOC 1.apr

Date: 9/25/02

Figure 6
IHSS Group 800-6
Sumps, Tanks and
Process Lines Removed

EXPLANATION

- - - IHSS
- - - Building 889 UBCS
- - - Tanks / Sumps (removed)
- - - Original Process Waste Lines (dashed where removed)
- - - Approximate Location of New Process Waste Lines (dashed where removed)
- - - Valve Vault Location
- - - Transite Duct (removed)
- - - Trench (removed)
- - - Former Extent of 889 Slab

Other Map Features

- - - Buildings and other structures

DATA SOURCE BASE FEATURES:
 The utility alarm line shown corresponds to the alarm lines shown on Engineering Drawing 15501-43 and consist of miscellaneous leak detection alarms, the alarms, and other utility alarm systems. They do not represent security alarms or similar systems. Buildings, fences, hydrography, roads and other structures from 1994 aerial fly-over data captured by EG&G RSL, Las Vegas. Digitized from the orthophotographs. 1/95

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Scale = 1 : 220
 1 inch represents approximately 18 feet



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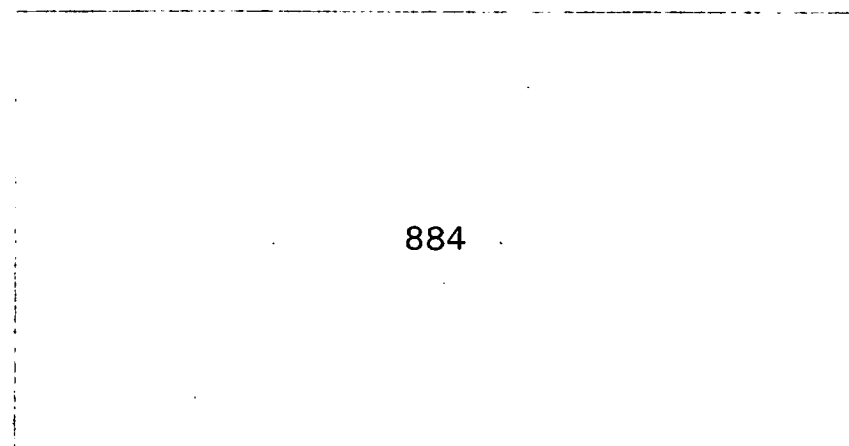
GIS Dept. 303-955-7707

Prepared for:

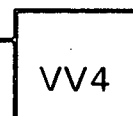
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September 20, 2002

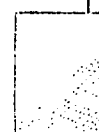
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884



VV4



T-40

North T-28

Janitor's Sink

South T-28

Pump Sump

East Tank

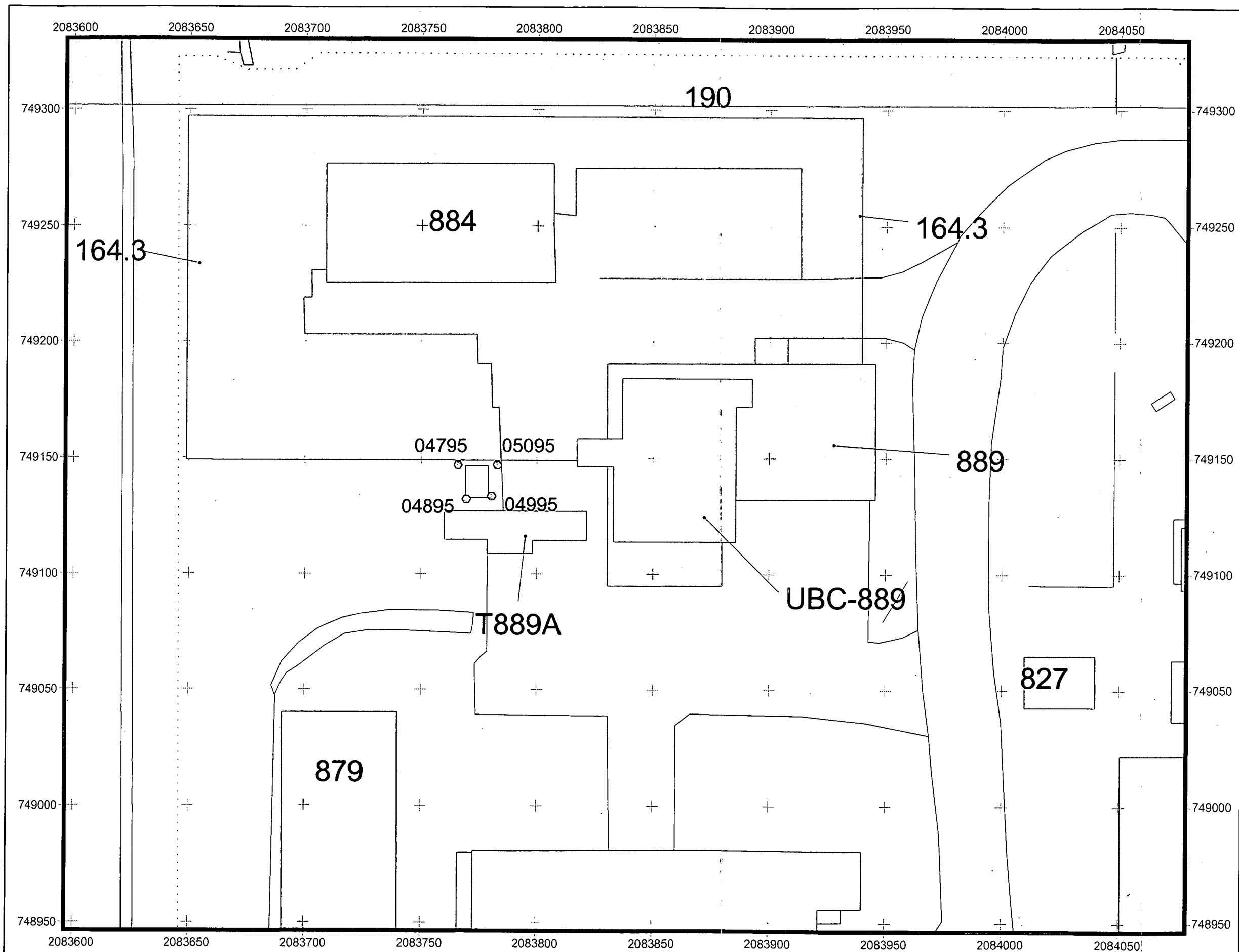
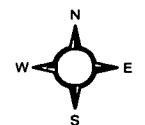


Figure 10
IHSS Group 800-6
No Longer Representative
Samples

KEY

- No Longer Representative Sample Locations
- IHSS location
- UBC location
- Building/structure
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature

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30 0 30 Feet

Scale = 1:400

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RADMS



File:800-6 nlr 1.apr

Date: 9/25/02

Figure 3
Accelerated Action Analytical
Results Above Reporting Limits or
Background for IA Group 800-6

- KEY**
- HSS location
 - PAC location
 - UBC location
 - Building/structure
 - Paved area
 - Dirt road
 - Stream, ditch, or other drainage feature
 - Original process waste line
- Existing soil sampling locations
- Both subsurface and surface soil
 - ▲ Subsurface soil
 - Surface soil
 - Tanks and Sumps

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Scale = 1: 1300
40 0 40 Feet

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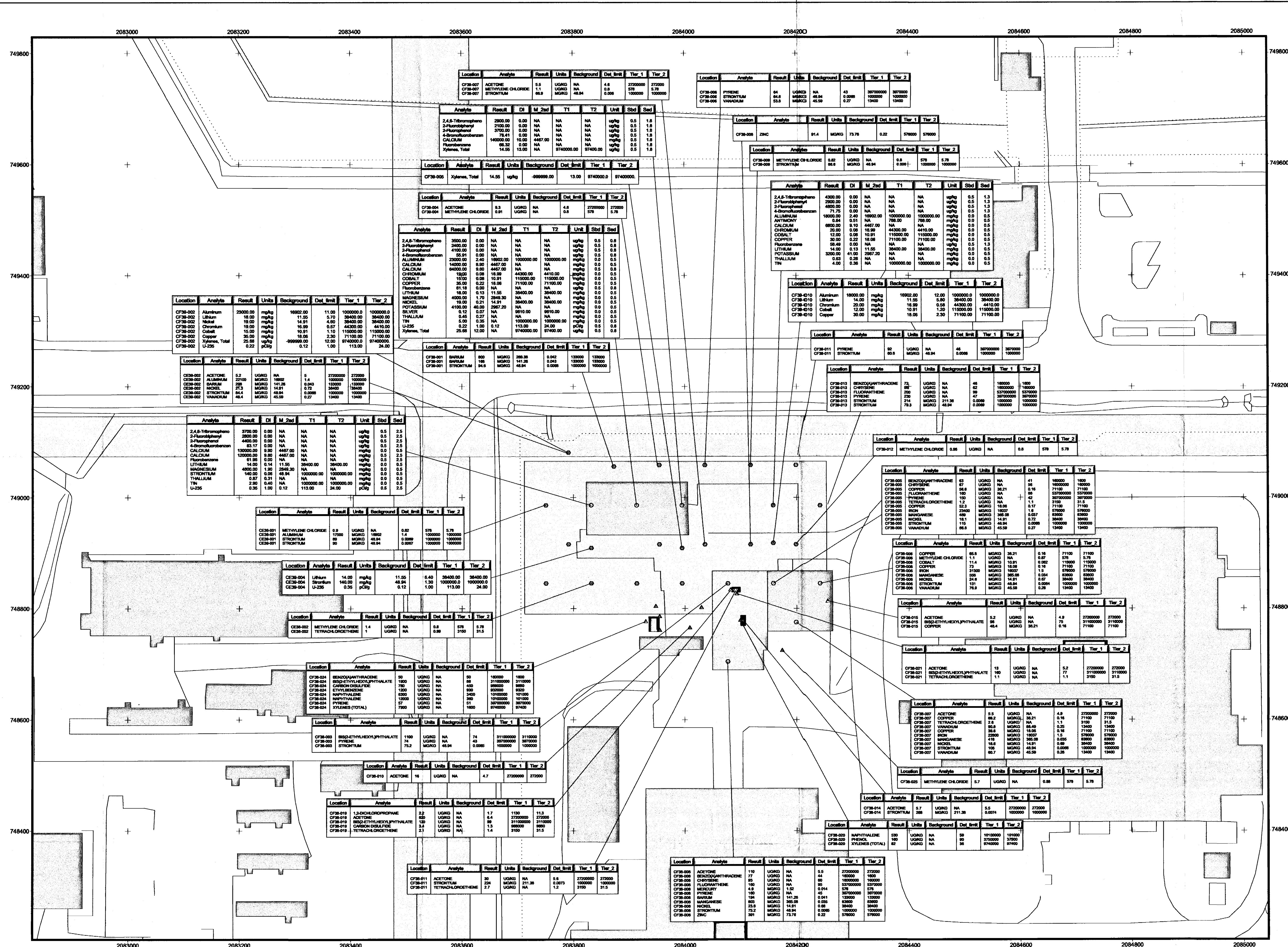


Figure 8
Residual Concentrations
In Southern Part
of IHSS Group 800-6

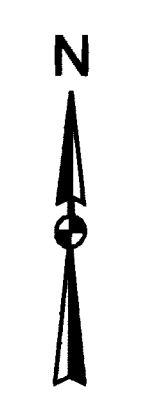
KEY

- IHSS location
- PAC location
- UBC location
- Paved area
- Dirt road
- Stream, ditch, or other drainage feature

Existing soil sampling locations

- Both subsurface and surface soil
- Subsurface soil
- Surface soil
- Sediment Location

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Scale = 1:900



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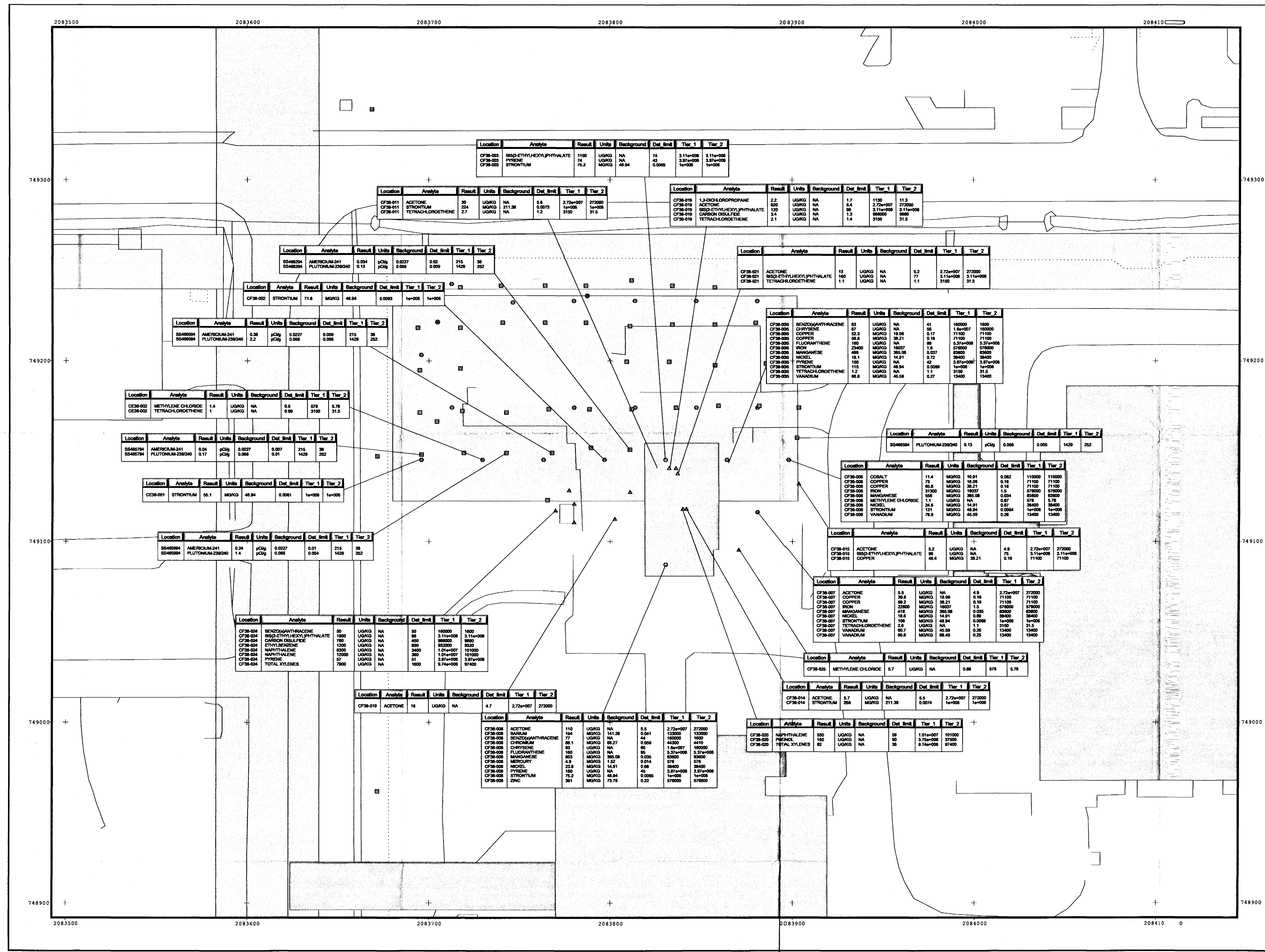


Figure 7
Residual Contamination in Northern Part
of IHSS Group 800-6

KEY

- IHSS location
- PAC location
- UBC location

- Paved area
- Dirt road
- Stream, ditch, or other drainage feature

Existing soil sampling locations

- Both subsurface and surface soil
- ▲ Subsurface soil
- Surface soil
- Sediment Location

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Scale = 1:1000

50 0 50 Feet

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Prepared by:



File: 800-6 residual conc north2.apr

Date: 9/28/02

